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Selling Health—a Vital Duty*

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IF there is one word more than any other being broadcast in these times, it is the word "Health." More and more the American people are being awakened to a profound realization of the importance that attaches to that word. And not much longer will it be said with truth that greater attention is given to the care of a hog than to that of a human being.

The last decade has witnessed many important advances in America's public health. Each year sees the status of the last eclipsed. But much remains to be done. The thoughts which dominate me are concerned with the important rôle that still remains to those who can and should "sell" health.

Perhaps it may seem to be needless repetition to talk about health publicity. Certainly what I can contribute on this subject is not new, and it may be especially boring to those who are experts on publicity. However, because health publicity has been much discussed, I fear the opinion may be growing that it is a branch of public health science that has matured, and whose functions are established. Unfortunately this young branch of our profession is still in its infancy and its opportunities are still mainly in its future.

Reiteration may dull the glamour of its romance, and may make a bromidic bore of a great tale. We must recognize that years and decades of persistent hammering away at the individual's indifference is necessary, and only by this means will we rouse him to the lessons that should come to him from health propaganda.

How many of you, proponents of health, whose business it is to further the health of the people, sell this commodity called "Health"? Every big business that has something to sell, spends vast sums of

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capital to train and send out live, alert and efficient salesmen. No other business in the world is bigger than that of keeping people well. Why then shall we lack enthusiastic, efficient health salesmen?

If it still needs to be done, we can manufacture two axioms: "Health is a saleable commodity"; and "There is a good market for it all of the time with all of the people." These things are true if health departments and great bodies like the American Public Health Association have the desire and will to create the market and exploit it. You remember that one of the common phrases of the recent war was "carry on." It is up to us who are in the front ranks of health promotion to create the market and then to "carry on" in the cause of this good work.

Mere laws to enforce health do not create health. A desire for good health must first be aroused, stimulated by knowledge of its value and means of attainment. Then the health salesman must come in. Time was when people used to "enjoy" poor health, but that day is going by.

Every health worker should be a health salesman, and to be a good salesman he must know his wares thoroughly. He must have absolute confidence in his line, for to make others believe, he himself must first have the convincing enthusiasm of a great belief.

The health officer who is in the business of selling health must also have sound health himself and must surround himself with evidence of it. If he has small children who are constantly ailing, he cannot argue convincingly for an infant welfare clinic unless he utilizes such or a similar facility himself. If he has a set of neglected teeth, he cannot well convince the community of his belief in the efficacy of a dental clinic.

If the health officer's house or office is insanitary or unscreened, if he and his family sleep with the windows closed, if his personal habits are not the habits of good health, he belies his teachings; gives a bad example; and sets up a most powerful argument against the very things which he is trying to sell. He must not be a health prostitute. Remember that health is more easily caught than taught.

The health officer who urges eating a proper diet, and then does not live by his teachings, cannot expect the community to follow his advice. He must carry his faith into daily personal practice. Who does not know how difficult it is to induce people to use an article unless he himself uses it?

Disease and sickness must be exposed to the cleansing light of universal knowledge. They are largely maintained because of the public's ignorance of what health is and how to keep it.

The efficient health salesman must come in, even more than he has attempted in the past. He must talk health and talk real facts, not surmises. He must be scientific, specific, optimistic; and he must use every available means to reach his audience.

Publicity is the best medium to accomplish these ends. Publicity we have employed, but insufficiently and often by methods that call for radical change.

The first quality of health news must be its accuracy. I preach the lesson that experience has taught me. No publicity should ever be released by the health official unless it has been edited and has met the approval of the technical expert. The context must be right before it is worthy of release.

The value of good health news, published in the right way, is still too often neglected by health authorities. Such news must be the kind that sells health to the community. If it is prepared for reading, it should be prepared in readable print, well spaced, properly headed and paragraphed, thoroughly illustrated, and well printed. Similarly, other forms of publicity should be adequately prepared. An optimistic viewpoint and a cheerful attitude should always be maintained. The sentences should be short and the words simple, so that they may be understood by all who read, including the young and the foreign born.

Simplicity appeals. Need I remind you of the great words that have lived? The whole lesson of prayer was taught by Jesus in a petition of sixty words. The Lord's Prayer is probably more generally known than any other verse. How simple its diction and rhetoric! Were it as complicated as our national anthem not one in a thousand could repeat it. The most wonderful poem in the Bible, the Twenty-third Psalm, consists of 118 simple words. Consider its brevity, its simplicity and its clarity. It is universally known, and probably holds more truth and religion than any other composition of similar length. The world has been slow to learn many of the lessons in the life of Jesus. One of them which is often given little attention, but which is of great importance to preacher, lawyer, orator, hygienist and to a man making a presidential address, is the blessed virtue of being brief.

The greatest speech of all time was given by Lincoln at Gettysburg. Why is it so great? Primarily because of its simplicity and its brevity. Let simple language carry your message to the people.

Few of us can write as the Prophets wrote; and none of us can repeat the feat of Lincoln. *But we can follow,* for the guides they left us are plain and permanent.

Other means we may use; but above all, the press, the greatest molders of public opinion today, the movies, and the radio, must be our media through which we shall build the Empire of Health. Inoculate these media with the seeds of health facts and they will infect the people with messages both gripping and convincing. Health will be even more contagious than sickness is now.

In a hundred years in our country the death rate has been cut in two. The credit for that, in my opinion, is in great part due to public health activities and publicity.

The same means by which such countless lives were saved are in your hands today, but they have not been used to their full possibilities. We must strive ever more vigorously in tuberculosis and cancer control. But if we just apply the methods that are now generally known to be life saving and health producing, as many lives can be saved in the next two decades as were saved in the past century.

I say to you, and it is my conviction, that one of every three deaths among American citizens could be prevented if the utmost in intelligent health education were attained.

The figure is astounding. Think of saving 500,000 lives a year in this great nation of ours! You men who sit at health administration desks and scan the death certificates—you know how many of them carry the tragic story of a life lost that should have been saved.

Hence I say that our aim shall be to sell health. The Lord promised to man, in the Old Testament: "And his days shall be an hundred and twenty years." We should strive to give him his biblical quota, and let him have a century of life, at least. And while we add years to his life, let us be sure to add life to his years, and make them hale and vigorous.

Moreover, we should add lives to the nation by saving babies, preventing epidemics, by carrying our knowledge of health giving and life saving measures to the humblest citizen of the lowliest hamlet in the land.

My plea is that you live health, talk health, sell health and think health. Sell it alike to young and old. Sell it by example and precept; by good health news published in the right way; through the press; by the motion picture, the radio, slogan and poster, or in any other way you will. But *sell* it. Science may outstrip public knowledge, but hygiene must remain to serve the people.

Practical Points about Active Immunization against Diphtheria and Scarlet Fever*

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PROBABLY the most important point at present under discussion in the immunization of children against diphtheria is the preparation to be used. There are four preparations now available: toxin, nearly neutralized with a trace of antitoxin produced in horses; toxin nearly neutralized with antitoxin produced in goats; and toxin modified by exposure to moderate warmth and a small amount of formalin, so that it becomes practically free from toxic action. This is called anatoxin or toxoid; and finally toxin modified by the action of formalin to a lesser extent so that it is chiefly toxic. This is also called toxoid but not anatoxin.

In the United States and Germany, toxin-antitoxin is chiefly used, in France, anatoxin, and in England and Canada the slightly toxic or non-toxic toxoid. The choice of the different peoples is largely accidental and to some degree influenced by patriotic reasons rather than by the especial value of the product.

Ramon recently has contrasted the virtues of anatoxin with the drawbacks of toxin-antitoxin.[1] The recognized importance of Ramon's opinion because of his having developed anatoxin causes us to consider his objections in detail.

His first objection is that toxin-antitoxin is very difficult to make and that because of this difficulty serious accidents have occurred and probably will occur in the future from its use. Having produced both preparations, we are certain that both are made without difficulty by experienced workers.

As to accidents, there have been three major ones and one minor. The first major accident was at Dallas some years ago, where through

* Read before the Health Officers Section of the American Public Health Association at the Fifty-seventh Annual Meeting at Chicago, Ill., October 17, 1928.

a mistake a preparation was sent which contained a large amount of free toxin and a number of deaths occurred. The next was in Vienna, where due to carelessness vials of dilute toxin were sent out which were of similar appearance to those holding toxin-antitoxin. Some of these were used in place of toxin-antitoxin with serious results.

The third accident was in Australia where toxin-antitoxin was sent out without any antiseptic. This was contained in rather large bottles from which the product was taken from time to time for the injections. The third drawing from the contents of one bottle taken some days after the first caused a number of deaths. The examination showed that the fluid was badly contaminated by virulent staphylococci. The first two drawings from this bottle had produced no injury, so that it must have become contaminated during the second drawing. These accidents were all due to carelessness and certainly had nothing to do with the nature of the preparation.

The minor accident happened in Boston several years ago when the surprising fact was discovered that freezing of the old preparation temporarily separated from its combination in the toxin-antitoxin enough toxin to cause on its injection serious but not fatal reactions. This separation does not take place with the present universally used 1/10 L + mixture. This objection of Ramon, that the nature of the preparation of toxin-antitoxin leads to accidents, is certainly not founded on fact. We have never had any accidents in New York City from its use in hundreds of thousands of children. Ramon's second objection is that toxin-antitoxin is slow in producing immunity. In our experience, which is quite large, there is no appreciable difference between the two preparations. Different preparations vary in their immunizing potency and, of course, if a good one of anatoxin is contrasted with a poor one of toxin-antitoxin there will be a difference.

Ramon's third objection has more validity and has been voiced by many. It is that the minute amount of horse globulin added to the toxin sensitizes those receiving it to later injections of horse antitoxin or other antibodies, such as are used in tetanus, scarlet fever, meningitis and diphtheria. He fails to realize that the objection if well founded can be easily obviated by substituting goat or sheep produced diphtheria antitoxin for that produced in the horse. This is already being done extensively and on an increasing scale. The goat and the sheep are sufficiently widely separated in species from the horse, so that at least in the amount used their serum does not sensitize persons to later injections of horse serum. Should this change be made? There is no doubt that the percentage of minor skin reactions following intracutaneous tests increases for a time in those who have had injections

of horse antitoxin-toxin, but in several instances where we have had the opportunity of comparing the reaction in large groups of children, there has been no appreciable difference between the reactions in those who had and those who had not had toxin-antitoxin previously. There is also no doubt that reactions due to serum have been improperly laid to sensitization by previous injections of toxin-antitoxin.

Certainly no serologist would agree that such an example as that recently recorded in the *Journal of the American Medical Association* was due to sensitization by toxin-antitoxin. A nurse one year after having been immunized with toxin-antitoxin developed sinus trouble with a possibility of a complicating diphtheria. Ten thousand units of diphtheria antitoxin were given. Four days later she developed a moderate case of serum sickness. Ten days after having received the dose of antitoxic serum she was given another dose of 20,000 units; she immediately developed an alarming attack of serum sickness. There was marked swelling in the tissue of the thigh where the serum was given. This finally progressed to such an extent that local gangrene developed. The sensitization here was certainly due to the injection of the serum given ten days earlier and not to the toxin-antitoxin of the previous year, for otherwise the severe reaction would have developed with the first dose of serum.

While it is true that we are more accustomed to using horse antitoxin to add to our toxin and that we do not ourselves fear sensitization, yet because many physicians fear the minute amount of horse serum, we think we should within a reasonable time substitute goat antitoxin for the horse antitoxin. Both preparations give equally good results. It is the antitoxin and not the animal which produces it which is of importance.

The problem remains as to whether goat or sheep toxin-antitoxin or anatoxin is the better immunizing agent. We have found each preparation when properly selected to be equally good. An injection of toxin-antitoxin gives somewhat less reaction in the children of school age, and the toxoid or anatoxin in infants and the younger preschool children. Fortunately, therefore, each health officer can choose the preparation he prefers, and if it has been properly tested for potency in the laboratory, he can count on good results.

The next subject we choose as appropriate to take up is a modification of the Schick test. The extra labor involved in the Schick test has caused its pretty general disuse in the campaign for the active immunization of preschool children, and in country districts in the school children also. Five years ago we tested the possibility of using the first dose of toxin-antitoxin as a test for immunity as well as an

immunizing agent. We found that the properly standardized preparation of which the injection of 1 c.c. would usually cause the death of a 250 gm. guinea pig, would serve the double purpose. It should be given strictly subcutaneously and as superficially as possible. We found the anterior part of the arm just above the elbow the best place for the injection. Anatoxin cannot be used for this purpose, as the reaction due to its injection is produced by other proteins and not by diphtheria toxin. In young children the toxin-antitoxin reaction parallels the Schick reaction. In older children there is a 10 to 20 per cent increase of positive reactions. Some of these are persistent pseudo reactions. The error if present is on the right side. The reading of the reaction should be delayed until the 6th or 7th day to allow the pseudo reactions to largely disappear. Inspected on the 6th or 7th day, the children showing a reaction are given a second dose, while those showing no reaction are allowed to go without further treatment. A week or 10 days later, the third injection is given. In those using this method for the first time, it is well to control the test in some of the children by an additional Schick test. We have found this method a very useful one where the Schick test is not to be done. It is in use in the public schools and in the baby health stations in New York City. This test should not be substituted for the Schick test in a retest.

The Retest—As three injections of even the best preparations of toxin-antitoxin or of anatoxin or toxoid do not give over 90 per cent immunity on the average, a retest should always be suggested. If the offer is not accepted, the health officer has at least done his part. Without this test, no parent is certain that the child is immune. The retest should not be done earlier than the end of 3 months, as some children are slow in developing immunity. With a retest a control test is always advisable.

Should those who have once been successfully immunized be reinjected in later years? Our experience has taught us that there is a slight tendency for a small percentage of cases to gradually revert to their former positive condition. It is very hard in cities to follow the children. They leave their institutions or move to new homes and addresses are lost. We have been able, however, to follow a few children and a much larger number of adults. The following summaries give the results of retests made 8 years after the original injections.

THE PERSISTENCE OF A NEGATIVE SCHICK TEST IN CHILDREN WHO WERE IMMUNE THROUGH NATURAL CAUSES OR WHO WERE IMMUNIZED BY TOXIN-ANTITOXIN

Eighteen infants and young children who gave a negative Schick test in 1919 when retested in 1926 were all negative.

Twenty-five infants and young children who were positive in 1919 and received 2 injections of toxin-antitoxin when retested in 1926 gave negative reactions in 23, a positive reaction in 1 and a doubtful reaction in 1. This was probably a pseudo reaction.

Either 92 or 96 per cent retained their immunity.

THE PERSISTENCE OF A NEGATIVE SCHICK TEST IN ADULTS WHO WERE IMMUNE THROUGH NATURAL CAUSES

Twelve hundred and ninety-five adults tested in 1920 gave 1,115 negative reactors with no pseudo reaction and 180 negative pseudo reactors.

At the retest in 1928 the 1,115 which had given no reaction gave the following results: 990 were absolutely negative, an additional 144 were negative but gave a protein or pseudo reaction.

Forty-nine gave a positive reaction without a pseudo reaction and 32 gave with a positive reaction also a pseudo reaction.

The results indicated that 93.4 per cent retained their naturally acquired immunity for 8 years.

The 180 which were considered to have given a negative pseudo reaction showed the following results at the retest in 1928.

Fifty-eight gave negative reactions; 91 gave pseudo reactions; 7 gave positive reactions; 24 gave combined reactions; and 83 per cent remained immune.

THE PERSISTENCE IN ADULTS OF ACQUIRED ACTIVE IMMUNITY AS SHOWN BY A RETEST 8 YEARS LATER

One hundred and seventy-eight adults originally giving a positive Schick test became negative in 1920 after 1 or 2 series of 2 injections of toxin-antitoxin.

Retested in 1928 the following results were obtained:

	Per cent	
81 were negative without pseudo reactions	45.5	62.3
30 were negative with slight pseudo reactions	16.8	
34 were probably negative with marked pseudo reactions	19.0	81.3
33 were positive with or without lesser pseudo reactions	18.5	

We find therefore that 62 per cent retained their immunity and that an additional 19 per cent probably did. It is fair to consider that at least 75 per cent of those actively immunized retained and 25 per cent lost their immunity obtained through the stimulus of toxin-antitoxin. There is a possibility that this immunity may have been reinforced in some way by their having become carriers of diphtheria bacilli at some time during the 8 years.

The results of these tests suggest that the lapses are not great enough to make it necessary to reinject or retest as a public health measure. Children seem to hold their immunity somewhat better than adults, possibly because non-immune adults have shown a resistance to the natural causes which produce immunization. We must remember that in time of exposure we are never certain that a person's immunity has persisted.

Is a negative Schick test a guarantee of immunity? We have not space to consider this fully. If there is sufficient antitoxin in the skin

of a child to neutralize an intracutaneous injection of one-fiftieth of a minimum fatal dose of toxin for a guinea pig, we do not believe that a child can develop diphtheria. Nevertheless, we should always advise that antitoxin should be given in any child really suspected of having diphtheria. Why? The technic of the injection of the diluted toxin may be incorrect in a given case such as the needle going a little too deep or the full amount of fluid not being delivered or the toxin may have lessened in potency because of aging or because of being preserved in improper glass. We must not think, on the other hand, that because a case has a positive culture the case is necessarily one of diphtheria. A case of tonsillitis due to other germs can perfectly well be a carrier of either virulent or non-virulent diphtheria-like bacilli.

ACTIVE IMMUNIZATION AGAINST SCARLET FEVER

It is doubtful whether we have made striking progress since Gabrischewsky in 1907 proposed the use of a vaccine made of the culture fluid and streptococci. Since his first dose of 0.5 c.c. of vaccine produced a rash like that of scarlet fever in 13 per cent of the children, it probably contained between 2,500 and 5,000 Dick skin test doses. As the second dose was double the quantity of the first, and the third was double the quantity of the second, he probably gave in the three injections about 25,000 skin test doses. Gabrischewsky died shortly after he published his results; but his work has been carried on by others. They report that the vaccinated children in the villages of Russia where scarlet fever is abundant rarely develop scarlet fever, while the unvaccinated frequently develop it.

The brilliant discovery of the Dicks that the filtrate of the culture could be used when given in proper dilution as a test for immunity in the same way as the Schick test for diphtheria, enabled us to decide on those who needed immunity; gave us a method of determining the duration of immunity; and allowed us also to estimate the amount of toxin given in the immunizing injection. It was found that moderate amounts given in three to five doses at intervals of 1 week or more produce immunity in a short time in the vast majority of children.

EARLY IMMUNIZATIONS IN NEW YORK CITY

Our earliest attempts to immunize children were made with comparatively small amounts of toxin. At first we gave only 1,500 skin test doses divided into three injections. We found fairly good results so far as immunization was concerned, but it did not hold. We then increased the amount to 4,000 and then to 12,000. We got very good results with 12,000 skin test doses divided into five injections. These were: 700, 1,200, 2,100, 3,000 and 4,000 skin test doses. At the end

TABLE I

RESULTS OF INJECTING 200, 400 AND 800 SKIN TEST DOSES AS SHOWN BY RETEST 5 AND 13 MONTHS AFTERWARDS AT ST. DOMINICKS

Original Retest at 5 months	%	13 months	%	
One hundred	++= 0	++=20		very susceptible
positive cases	+= 8= 9.8	+= 9		susceptible
of St. Dominicks	±=27=33.3	±=14		doubtful
Test by	−=46=56.8	−=57		immune
Dr. Schroder	—	—		
	Total 81	Total 100		

of 4 weeks, 91 per cent of the children gave negative Dick tests and 7 per cent gave doubtful tests, leaving only 2 per cent definitely positive. Even with these larger doses we found immunity did not last beyond 6 months in many of the more positive children. We then still further increased the amounts with the hope that the duration of immunity might be greatly increased. The doses we are now using are 1,000, 5,000, 10,000, 15,000 and 15,000 to 30,000 skin test doses. The injections are given at weekly intervals or at slightly longer intervals.

The following three tables give an idea of the changes which have taken place in dosage during the past few years. Similar changes have taken place in the practice of others. Thus in the *Journal of the A. M. A.*, May 16, 1925, the Dicks give a table showing the increased amount of immunizing power of different doses. Thus when 1,000 to 2,000 skin test doses are given they find 14 per cent of the children become completely immunized; when 5,000 to 6,000, 66 per cent, and when from 10,000 to 12,500, 91.8 per cent.

Before the publication of this table we obtained some interesting results on retests which are seen in Table I. Although from 1,000 skin test doses divided in 3 injections, we found on retesting at the end

TABLE II

RESULTS OF FIVE IMMUNIZING INJECTIONS AT THE END OF 3½ MONTHS APPROXIMATELY 500, 1,000, 2,000, 3,000 AND 4,000 SKIN TEST DOSES

	After 3½ Months		
32 + + or + + 1	1=+	81%	immune
Strongly positive cases	5=±	=17%	probably immune
	23=−	= 2%	probably susceptible
	*3=±	negative pseudo	
37 + or + 1	34=−		
Moderate reactors	*1=+	negative pseudo	100% immune
	*2=±	negative pseudo	
69 + to + + 1	1=+	91%	immune
All positive reactors	5=±	7%	probably immune
	57=−	1%	probably susceptible
	1=+	negative pseudo	
	5=±	negative pseudo	

* 1 + and *5 ± are considered negative pseudo reactions because of an equal reaction in the control neutralized by convalescent serum.

of 5 months no strongly positive reactors remaining, and but 10 per cent of moderately reacting. At 13 months, however, we found 20 per cent again giving strong positive reactions. The Dicks and others had the same experience and so the doses and the number of injections have been mounting until they are giving 5 doses containing altogether over 100,000 skin test doses. These large doses are given wholly with the hope of producing a more lasting immunity in the strongly reacting children. They give to about 98 per cent of positive children a negative Dick reaction. Table II shows that with 10,000 skin test doses very good results for the immediate season were obtained by us. Table III gives the results in our children following larger doses. In the course of another two or three years we will definitely know whether in order to obtain prolonged immunity we should give 100,000 or more test doses.

TABLE III

RESULTS AT DIFFERENT INTERVALS AFTER GIVING LARGER DOSES OF SCARLET FEVER TOXIN DIVIDED INTO 5 DOSES

No. Children Giving Positive Reactions	Time Since Immunization of Retest	Amount Toxin	Per Cent Immune
40*	6 months	31,000	71
69	8½ months	46,000	84
56	11 months	31,000	68
11	14 months	31,000	82
19	15 months	26,000	80
16*	2 years	31,000	37.5

* The number watched for two years is too small to be considered as determining the average duration of immunity.

The persistence of immunity in those who have become naturally immune is encouraging. Thus we found:

RETESTS ON CHILDREN ORIGINALLY NEGATIVE

Of 140 negative children 27, or 19 per cent, were moderately positive 13 months later. Those cases which show pseudo reactions equal to the toxin reaction are called negative-pseudo although they may be combined.

In the general local treatment of the children receiving the immunizing injections, we have found it useful to give them a laxative on the day of the injection and to apply wet dressings, usually using boric acid solution, to any children who show an inflammatory reaction in their arms. With these doses we have not had any general rashes develop but the first and second doses sometimes cause a local inflammatory reaction and sometimes vomiting and a rise of temperature.

The Russians still continue to give with the toxin the dead streptococci as first suggested by Gabrischewsky. Whether this method has any appreciable advantage over the pure toxin is doubtful. The aim is to develop antibacterial as well as antitoxic immunity. Some of the American biological plants also distribute such a vaccine. The Larsen preparation of toxoid has been employed by many. We have

found that four or five doses are required to obtain nearly 100 per cent of immune children. It does not seem to us to have any advantage over the toxin.

THE CONTROL TO THE DICK TEST

In making careful tests for immunity to diphtheria, we give alongside of the Schick test a control test of heated toxin. The toxin itself is slow in developing a reaction and this does not reach its height until the 4th day, while the protein substances left in the heated toxin produce in sensitized persons a quick reaction which is generally of short duration, although in a few cases it may persist for several weeks. With the Dick test the toxin acts like the pseudo reaction in the Schick test as well as that from the control heated toxin in the Dick test—that is, the Dick test and the control test give identical reactions which show their greatest extent at the end of 24 hours. It is therefore impossible to be sure when the control test is similar to the Dick test whether it is a pseudo reaction indicating immunity or a combined reaction indicating susceptibility. In children who have received no vaccination, there are few pseudo reactions, but in those who have received the large injections of vaccine now in vogue, we get a good many pseudo reactions. An added difficulty is that even boiling for 3 hours does not destroy all the toxin. This is determined by the fact that the apparent pseudo reaction in some children is prevented by mixing the boiled toxin with scarlet fever convalescent serum. There is a considerable difference in the amount of pseudo reactions developed by the injection of different preparations.

THE RELIABILITY OF THE DICK TEST

The Dick test in our opinion is almost, but not quite, as reliable as the Schick test. The same care must be taken that the toxin is properly standardized and that it is placed in vials of proper glass. The toxin is more resistant than the diphtheria toxin and can be distributed already diluted. The difficulty with the Dick test is that, as the toxin can only be properly tested in the skin of human beings, it is not apt to be as thoroughly tested as the diphtheria toxin. Also because there are other streptococci which belong to different types which cause fever and scarlet rashes, these may infect those who give a negative Dick test. Such streptococci are, however, in a great minority. The Dick test as a retest is less reliable because of the occasional difficulty of separating the toxin reactions from the pseudo reactions. The occasional errors are however on the safe side.

How generally should scarlet fever vaccination be employed? This is a very debatable question. In the first place, scarlet fever at

the present time is a rather mild disease in most sections of the country. The deaths in New York City, for instance, are less than 1 in 100,000 persons. The cases, however, amount annually to 10,000 to 20,000. The five doses of the toxin are also a disadvantage. While immunization is rapid it is not always lasting with our present dosage in those who were strongly positive. We cannot yet expect to develop an immune population. In a personal communication the Dicks inform me that the injection of a total of 100,000 or more skin test doses divided in five injections produces an immunization in about 98 per cent which lasts for at least 2 years. At present therefore we only urge that it be given to all nurses who expect to be in contact with scarlet fever and to all children in institutions. We advise that it be used in schools and families where exposure to scarlet fever is imminent because of outbreaks in the neighborhood. When a case of scarlet fever breaks out in a family or institution, we prefer to do a Dick test on the inmates and to begin active immunization of those who have been exposed or who may be exposed rather than to give scarlet fever antitoxin. The scarlet fever antitoxin only gives an immunity lasting from 10 days to 2 weeks, and at present is more apt to produce serum sickness when injected into human beings than does diphtheria antitoxin.

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Industrial Fatigue*

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THE conventional attitude toward industrial fatigue carries with it the implication, however latent, that work is a health liability and that fatigue is a functional disease superinduced by work, and that, therefore, any move toward a shortened workday or work week is in the direction of greater freedom, health, and happiness. My concept of fatigue carries the implication that work, within reasonable bounds, is one of the greatest stabilizers of health that we have; that fatigue, which is not superinduced by a condition of physical impairment and deficiency, is a part of the normal rhythm of life and a condition to be welcomed as one necessary in maintaining the balance of mental and physical health.

It seems first necessary to arrive at as clear an idea as possible of what is meant by industrial fatigue. As shown by a study of the Bibliography on Industrial Fatigue and Allied Subjects,[1] fatigue researches heretofore have been directed almost wholly to the supposed effects of industrial work upon the muscular or nervous state of the individual, and practically the only attainable criterion has been that of the work curve.

There is a preponderance of opinion in favor of the thesis that industrial fatigue arises in the nervous system rather than in the muscular system. However that may be, it seems desirable that the study of physiological fatigue—the reaction of the worker to any form of work or environment—should be studied in groups reasonably normal as to their physical state as compared to groups showing some departure from the normal which might conceivably be either partly or chiefly responsible for either an unfavorable work curve or a conscious state of fatigue in the individual.

At the present time the trend of opinion seems to be against the view that there is any specific fatigue toxin affecting the muscles and it may well be that a variety of toxins derived from bacterial action rather than from muscular work affects both the nervous system and the muscular system.

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* Report of the Committee for the Study of Industrial Fatigue, presented to the Industrial Hygiene Section of the American Public Health Association at the Fifty-seventh Annual Meeting at Chicago, Ill., October 16, 1928.

It is rather remarkable that in the 440 references given in the Bibliography[1] there are only 9 articles which deal specifically with the intrinsic factors contributing to fatigue—those present in the individual at the time of going to work as contrasted with environmental factors such as the nature and degree of work or working conditions—and there were 10 touching lightly upon these intrinsic factors. The balance are devoted wholly to the consideration of extrinsic or environmental factors as responsible for that impairment of working capacity which has been loosely termed "fatigue." Evidently here is a fertile field for research and for a readjustment of the attitude toward the whole subject of fatigue study.

So comparatively negligible a factor as the color of the walls in a work room has been given serious consideration, while the possible influence of such definite conditions as septic tonsils or defective vision as a factor in fatigue has been given little attention. If more than half of the people in such a room have faulty vision, uncorrected—as we find to be true in average groups—which is more important, to seek out this faulty vision and correct it or merely to mitigate the fatigue of these strained eyes by changing the color of the walls?

The ideal advanced by certain efficiency experts in finding the one best way of doing a piece of work in industry may have some merit. But the fundamental need is better expressed in the ideal of attaining the best physical and mental state in which to do this work.

The conventional view arises from the unfortunate fact that in industry it is too generally assumed that there are 2 classes of people, the sick and the well. That the majority of workers who do not report on the sick list are far below a condition of physical efficiency is a factor too generally ignored. It needs but little thought or examination of the subject to convince any reasonable man that there is a wide range of possible intrinsic factors affecting the work curve which have nothing at all to do with the hours of work, the kind of work, or the environment in which the work is carried on. It is indubitably true that a half-sick man will be benefited and his work curve improved by mitigating, through improvement of his environment, the demands made upon him. But the question may be sharply raised as to whether or not this is a method leading to a fundamental or maximal correction of those manifestations grouped under the term "industrial fatigue."

I am pleading for a balanced study of this whole fatigue question in which each line of research shall be properly weighted. The physiological studies must be continued. However, these studies seem less important than the larger objective of ascertaining the total

physical condition of any working force, and of estimating what sources of waste, inefficiency, and non-productivity there may be in actual physical disability, especially that not reflected in the absentee rate or sickness rate.

Attention is called to the great importance in industry of detecting what is termed "silent sickness," the chronic disease which actually contributes more heavily to the death rate than the acute types of disease reflected in the absentee rate in industry. We should ascertain the part played by these chronic maladies in lessening the efficiency of the industrial worker and shortening his work cycle.

In certain lines of industry true fatigue is a major problem; that is, assuming that all workers engaged in a particular industry were fully up to standard physically, there would be in that group a strain involving the nervous and muscular systems that would constitute a real problem and require adjustment of working conditions and working hours. In all plants it is a consistent and meritorious objective to adjust both working hours and methods on the best possible plane. What that plane is, however, is difficult to determine without specific studies.

It seems highly desirable to investigate the work reaction of representative groups of employes, ranging from those who upon careful examination appear to be in a state of comparative freedom from physical defects or mental or nervous insufficiency to those who are really seriously impaired. The entire range of these possible conditions will be found in any fair sized group of working people who have *not* reported on the sick list and are supposed to be just ordinary healthy workers.

One of the most striking instances of an intrinsic factor affecting the work curve was revealed in the studies made by the U. S. Public Health Service[*] in the investigation of acid sodium phosphate in delaying the onset of fatigue. Emden[*] reported a favorable effect of this substance in delaying the onset of fatigue among soldiers during the late war, and it was assumed that it constituted a chemical antidote to fatigue poisons or supplied some chemical lack in the working muscle.

The result of these experiments indicated that acid sodium phosphate did not appear to increase muscular efficiency but that it induced a feeling of well-being especially among those who were somewhat below par when the experiment started. This, in the judgment of the investigators, was at least partly related to the correction of intestinal stasis. There was noted a distinct improvement in the bowel function among those using the phosphate.

The significant fact bearing on the thesis of this paper is that 80 per cent of the people in the group investigated suffered from a physical disability that was manifestly reflected in lowered physical efficiency.

The difficulty of determining a base-line from which to judge fatigue and other complicating factors rendered difficult any positive conclusions with regard to the effect of the phosphate on the work curve of the group under consideration, although Emden's conclusions from his own experiments were quite positive as to the beneficial effect on endurance and production.

The question raised by this investigation as to the possible effect of bowel sluggishness in inducing fatigue is worthy of more comprehensive study. Yet constipation is only one among manifold possible intrinsic factors influencing the efficiency and productivity of the employe.

The opinion that merely lightening labor is applying the best remedy to fatigue conditions contains a fundamental fallacy in so far as it relates to correcting that unfavorable deviation in the work curve that is so generally regarded as reflecting industrial fatigue. The proposal is frequently made that we adjust the job to the man. But for a really fundamental solution of the problem, the best approach would be to adjust the man to the job; that is, to study his condition and so far improve it that his working limitations would be expanded, rather than to compromise with his working limitations and let him settle down into a sub-standard job.

It is impossible to consider this question of fatigue without being at once led into the question of the longevity of the worker, his physical efficiency at the various decades of life, and therefore of the final problem of why the worker in industry is assumed to be more or less a liability at middle life and later. There is a certain naivete in so carefully discussing all of these fatigue states as a reflection of work itself and then accepting the dictum that the worker suddenly, without previous ill health, becomes say at age 50 (on the average) a liability in the plant.

Secretary of Labor Davis has bitterly deplored this traditional attitude toward the man of 50 and speaks of the time when at that age it was customary to give a man a gold-headed cane and gracefully bow him out of the plant. Of course a broader view is taken of this question now and in many plants there is a real effort made to adjust every kind of work to the older workers who have been highly trained and who have served their employers faithfully. This is a very wise policy as far as it goes, but a very unwise policy if it stops there.

Through a right approach the need for adjustment of working conditions to the elderly man will be lessened, or rather the age at which such adjustment is considered important will be pushed forward and the liability point fixed nearer 60 than 50.

These views are advanced in the hope that in all research centers in industrial hygiene where industrial fatigue is given considerable thought, there may be a readjustment of the mental attitude toward this problem and an approach from a wholly different angle than has heretofore been customary in fatigue studies or in efforts toward the mitigation of fatigue.

No one can question the scientific wisdom or the practical sociological value of adjusting working conditions on such a plane that the worker shall have sufficient time for a broader life and for true self-expression. But no real progress is made in that direction by falsely presenting the effect of working conditions on the human organism. Error and misunderstanding on this question will be avoided if the effects of work and environment are measured upon workers graded according to their physical equipment. Then there will be presented a true picture of the man at work.

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German Work for Psychopathic Children

SPECIAL provision for the welfare of psychopathic children is made by the municipal children's bureau in every large city in Germany, in accordance with the federal child welfare law of 1922, which constituted this work as a function of these bureaus. The work in each city is in charge of a psychiatrist, who is aided by trained visitors, and it is done in close coöperation with public schools, juvenile courts, and other agencies interested in child welfare. In some cities emphasis is laid on change of environment for these children, and they are placed in special institutions. In certain cities special day schools, including kindergartens, are provided for them. In other cities, psychopathic children attend the regular day schools and go periodically to a consultation center, which sends workers to visit these children at their homes. Annual reports from all the municipal children's bureaus stress the importance of psychiatric work as a branch of general child welfare work.—*Ztschr. f. Kinderforsch.*, Berlin, Aug. 25, 1928, p. 522.

The Use of Ultra-Violet Light Transmitting Windows*

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A NEW industry and a new line of selling talk have sprung into being within the past few years. To one informed as to scientific progress in irradiation as a means of controlling lime utilization in the body and of preventing rickets, the promotion of this particular industry is highly important and desirable. The selling talks of salesmen endeavoring to convince prospective customers demand critical evaluation and constructive suggestion to eliminate claims made without basis in fact.

The industry to which I refer is that concerned in producing window material which, correcting a defect of ordinary window glass, will transmit in addition to the illuminating rays those shorter sun rays that are now known to be curative and preventive of the faulty lime utilization designated under the term "rickets."

Pure quartz transmits these ultra-violet rays freely, and the General Electric Company by perfecting a method of producing sheets of clear quartz have given us window material of high transmissibility but, unfortunately for most of us, of very high cost. To meet this cost factor, less efficient window material has been devised by a number of firms, the products ranging from 60 per cent transmission when new, to all values less than 60 as compared with pure quartz. These panes still transmit enough rays to be clinically effective and are much less expensive than quartz, though at present considerably higher in price than ordinary window glass. It was soon found that by use these glasses lose to a degree their original transmission values, the change being designated as "solarization." The extent to which this change is possible becomes a factor in evaluating different market products in this field.

During the past eight months my laboratory has been engaged in testing the product of one of these glass manufacturers and also in conducting tests on the efficiency of an installation of the same glass

* Read before the Food, Drugs and Nutrition Section of the American Public Health Association at the Fifty-seventh Annual Meeting at Chicago, Ill., October 17, 1928.

in a school building in a neighboring village. Before reporting the character and results of these tests I would like to review some of the information and unsettled points on the subject in order that the scope and significance of the tests themselves may be more apparent.

There seems to be general agreement among experts[1] that rays longer than 3,130 Angstrom units have little antirachitic value (313 μμ); * also, that while protective action is exhibited by rays shorter than 313 μμ, and such rays are obtainable in artificial sources of ultra-violet light such as the mercury arc lamp or carbon arc lamp, the shortest rays that reach the earth from the sun are 290 μμ and, due to absorption by the atmosphere with its moisture, dust and smoke and the varying distance of the sun from the earth, sun radiation often contains none shorter than 300 μμ. These facts prove that if we propose to use the sun as our source of protective ultra-violet rays and to strain it through window material, the latter's transmissibility of the rays from 313–300 μμ is what vitally concerns us. To show us that a window transmits rays below 300 μμ may be of importance if we are going to use artificial sources, but if the sun is to be our source, there will be no shorter rays to transmit. Similarly, transmissibility of longer rays than 313 μμ may tell us that the window is a better transmitter of illuminating rays, but these rays have no bearing on our seeking antirachitic power. These facts definitely delimit one criterion of selection in buying ultra-violet transmission material.

Today it is also generally agreed that there exists in our bodies and in certain foodstuffs a chemical substance designated as "ergosterol." Except in a few foods (the notable exception is cod liver oil), the ergosterol as it is found has no antirachitic power, but when it has been treated for a sufficient length of time to the action of the short rays (rays of 313 μμ–253 μμ are now known to activate it), it becomes converted into what we call vitamin D and in this activated form controls the utilization of calcium in our bodies, prevents rickets and dental defects and generally supervises and adjusts our use of lime. When foodstuffs which contain the inactive ergosterol are irradiated with the short rays their ergosterol becomes vitamin D and the foods become antirachitic. When the body is irradiated with these short rays the ergosterol which is in our skin undergoes a similar activation, and after its probable absorption into the blood travels to the points where it protects us against rachitic troubles.

We may take cod liver oil with its already activated ergosterol;

* The length of light rays is usually expressed as millimicrons (a millimicron is one thousandth of a millimeter) or in Angstrom units (an Angstrom unit is one ten-millionth of a millimeter). Hence, in the literature a wave length may be given as 313 μμ (millimicrons) or 3,130 Å (Angstrom unit abbreviation). In this paper we will use millimicrons as the unit abbreviated as μμ.

we may eat irradiated foods with their activated ergosterol; or we may create this vitamin out of our own ergosterol by exposing ourselves to the short rays. In the last selection we must be sure that the rays reach the ergosterol in the skin, and their penetration power is very low, 1–2 mm. Clothing, dust and moisture absorb them.

Can a fully clothed individual, then, sit 6 or 8 feet from a short ray transmitting window and receive on his skin, most of which is covered by absorbing material, enough rays to do him any good? Must he sit in the direct path of the rays? Will reflected rays be of any value or are they wholly or in part absorbed when they strike the reflecting surfaces? These are practical queries, the answers to which determine: what rooms can be equipped to advantage with such window material; how to use them on baby and adult; and what care to give them to avoid nullification of value by films of dirt or moisture.

Does the mere presence of short rays of given length determine activity and protection? Marshall and Knudson[3] have recently confirmed by new experiments the evidence that intensity is quite as important as wave length. Using three wave lengths (302.2, 280.4 and 253.6 μμ) they report that in small energy doses the effect is independent of the wave length but that prolonged irradiation may actually destroy the power that a shorter period has created. We must then have a certain intensity of irradiation. At certain seasons of the year the sun's rays may contain active waves ranging from 290–313 μμ, but the intensity of these activating rays is widely different. Fabry and Boisson[8] found at Marseilles that rays of 314.3 μμ were 750,000 times and rays of 302.2 μμ 90,000 times as intense as the shorter rays present in sunlight. Transmissibility to 290 μμ may insure full intensity of the available sun rays, but higher transmissibility of rays from 300–313 μμ might make a more practical window, range being in part compensated by intensity.

How many hours can a naked baby lie in front of a window in direct sunlight with benefit and without injury? Is the time the same in June as in December? Data given in a published address of Dr. Hess[4] show typical seasonal and diurnal variations to be expected in the active rays of the sun. Hess shows that from December to February the amount of effective rays is much reduced and confined to a much shorter period of the day. The months when we need the windows most because of weather and temperature are those of least potent solar content. Bundesen and coworkers[5] found comparatively little ultra-violet of physiological value in the sunlight of Chicago during the winter months. Tisdall and Brown,[6] however, showed in Toronto that December sun contained enough to be protective of test

animals, and Fleming[7] in Washington, D. C., during December, 1927, and January, February and March, 1928, showed that not only was there enough of the rays present in the sunlight to protect test animals but that enough passed through Vitaglass, a typical window product, for this purpose.

This brief review is perhaps sufficient to explain the points which must be in mind in testing the efficiency of any sample of window material and to indicate the scope of the tests reported below.

Series I—To determine the efficiency of Vitaglass installation in a schoolroom in the vicinity of New York City during the months of January and February—This series of tests was conducted at the request of Superintendent of Schools Beattie of Bronxville, N. Y. Certain rooms having been equipped with Vitaglass windows, definite evidence as to their clinical efficiency was sought. Two of the rooms had almost identically the same exposure and differed only in the type of window glass, one being equipped with ordinary glass and the other with Vitaglass. In the Vitaglass room four cages of rats were distributed, one on the window sill in the direct path of the sun, one on a shelf on the window ledge but out of the direct path of the sun, a third on a shelf at the side of the room, and the fourth on a table at the back of the room. The other two cages were placed in positions in the ordinary window glass room corresponding to the first two locations given above. The rats in these cages were fed on Sherman-Pappenheimer[8] rickets producing diet No. 84. The installation was made on January 18, 1928, and the test was run for 30 days, ending February 16. It was felt that the positions of the rats corresponded to regions which pupils would occupy from time to time; that they would permit comparisons of indirect with direct light effects with and without Vitaglass; and that the clinical evidence of actual rickets prevention would be more convincing, if obtained, than mere data as to transmission and quantity of curative rays entering the room.

No evidence of protective action was obtained in any of the rats except the one directly in front of the window in the Vitaglass room. This rat was fairly well protected. None of the others in the entire period received enough curative rays to prevent acute rickets.

Series II—To determine whether in New York City during the period of spring in which schools are in session the atmosphere contains enough curative rays to be of significance—The Vitaglass Company was sufficiently interested in the evidence gained in the above test to ask that we conduct a series to settle the above point. A laboratory in the university, used by my department, has three windows facing south. The sashes of two of these windows were removed and

replaced by two Vitaglass panes each. By building a shelf in front of these three sashes on which to place rat cages, and by using screens to cut out cross rays (the set up is shown in the picture on page 1477) it was possible to measure the preventive action of transmitted rays through each of four panes of Vitaglass and through window glass as recorded by the rat occupants of these cages on a basal diet of rickets producing power (Sherman-Pappenheimer No. 84). Three 30-day tests were run. The first extended from about March 1 to April 1; the second from April 5 for a little over 30 days, extending through April into the first of May; the third series ran from May 20 to June 20. We were told that two of the Vitaglass panes were supposed to be solarized, but not which panes they were. In every series the rats received the direct rays passing through the south windows and, except for the windows, were protected from them only by the wire mesh of the sides and tops of their cages.

The first and second set of tests gave us protection for every rat in front of a Vitaglass pane, and the line tests on these rats did not permit differentiation between the four Vitaglass panes. Solarized and unsolarized glasses transmitted enough to prevent rickets. The controls before the window glass showed acute rickets.

During the third set of tests weather reports showed that there were less than 17 days of this period when the sun shone for 4 hours. This effect was evident in the line tests, for none of the four Vitaglass rats were protected though all showed a little more evidence of protection than the controls.

At the end of the third set of tests the panes of Vitaglass were removed from the sashes and sent to Professor Stockbarger of Massachusetts Institute of Technology, who tested their transmissibility to three wave lengths. The results are shown in Table I.

TABLE I

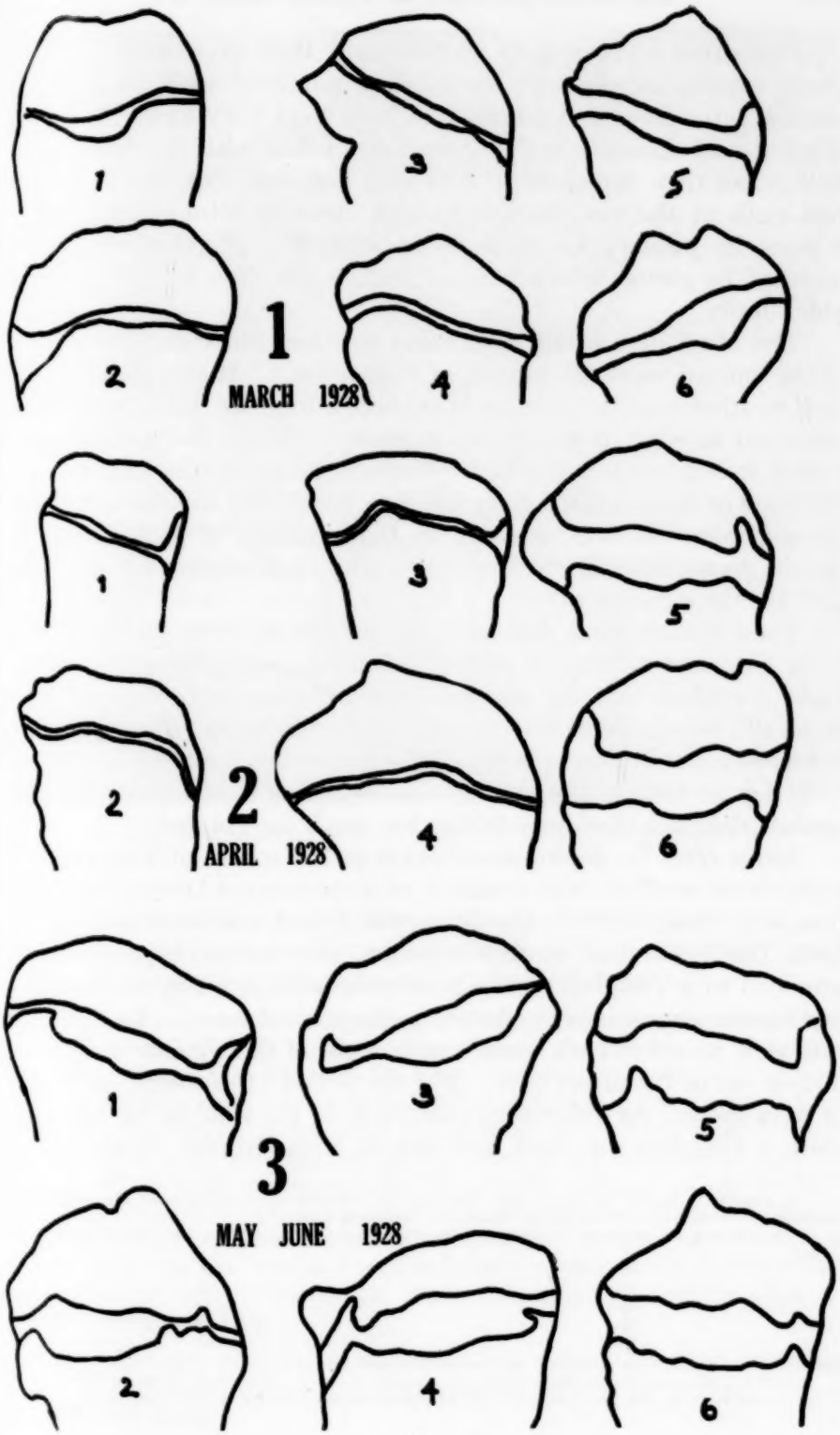
TRANSMISSIBILITY OF VITAGLASS PANES

Wave length	Pane No. 1	Pane No. 2	Pane No. 3	Pane No. 4
μμ	Per cent	Per cent	Per cent	Per cent
297.0	29	23	10	15
308.5	51	44	29	36
320.0	70	65	54	59
Thickness	2.2 mm.	2.5 mm.	3.4 mm.	2.8 mm.

EXPLANATION OF CHART I—THREE SETS OF VITAGLASS TESTS

Protection against rickets is shown by the "line test." The drawings in the chart are camera lucida drawings of the split ends of rat knee bones. The narrowness of the "line" between the end of the bone and the shaft indicates degree of protection. The narrower the line the higher the protection. Set 1 was made in March, 1928; Set 2 in April, 1928; and Set 3 in May and June, 1928. The numbers 1, 2, 3, 4 indicate animals that were in front of "Vitaglass." The numbers 5 and 6 indicate animals that were in front of ordinary window glass. All animals were exposed for a period of 30 days.

CHART I



Discussion—These tests demonstrate that even with solarized glass, continuous exposure for 30 days admitted with these glasses enough active rays and intensity in New York City to be chemically efficient and clinically active. In combination with the first Bronxville series they demonstrate that with sufficient exposure in the direct path of the sun there is enough curative ultra-violet in these regions in January to April to be clinically effective even when screened by glasses which transmit half or less than half of the available supply.

The May–June result, with rainy weather, illustrates sharply one of the limitations of this system of irradiation.* It also shows clearly that weather may be quite as important a limiting factor as seasonal variation in solar content and intensity. While the series in any period failed to show marked difference between solarized and unsolarized or less solarized glass this does not justify indifference to this phenomenon. It does reassure us that in spite of solarization the glasses do not lose all efficiency even with transmission cut to 25 per cent for the curative rays.

These results speak favorably for the use of these glasses in New York City and vicinity in winter, but at the same time they should make it evident that the user needs specific data as to exposure time or he will be unable to intelligently apply this means of sun therapy. To merely install these glasses in the home, lay the baby in front of them for an hour a day, and assume that this is sufficient insurance against rickets is obviously taking too much for granted.

Series III—To determine whether in the school of Experiment I position of windows was a matter of importance—During April and into May three rooms in the Bronxville school were used in a further test: One room had western exposure, one eastern exposure (both provided with Vitaglass) and a third room with ordinary window glass and eastern exposure was selected as the control room. Two cages of rats were placed in each room, one in front of the window and one on a shelf out of the direct rays. For the period of exposure given, east or west showed no difference; protection of the window rat was complete if Vitaglass was used, and lacking with ordinary window glass.

* In response to inquiry by the Vitaglass Company, the following report was received from the Carnegie Institution of Washington, Mount Wilson Observatory, Pasadena, Calif.:

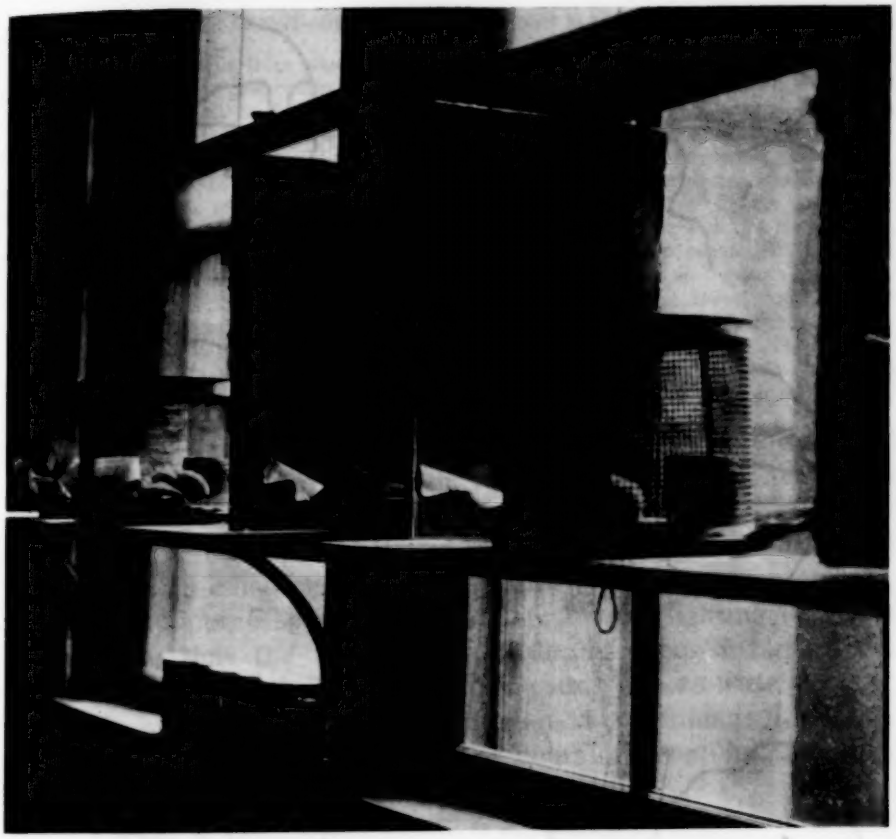
"The following are the monthly averages of the ultra-violet (0.32 μ) light in the sun for the dates you request.

Feb. 1928	1.28
Mar.	1.30
Apr.	1.30
May	1.20
June	1.22

You will note a general drop of about 7 per cent in May and June.

"At 0.32 μ the effect of complete cloudiness is ordinarily to reduce the intensity of sun plus sky to about 25 per cent of its value on a good clear day. During stormy weather it may drop to 15 per cent.

(signed) Edison Pettit."



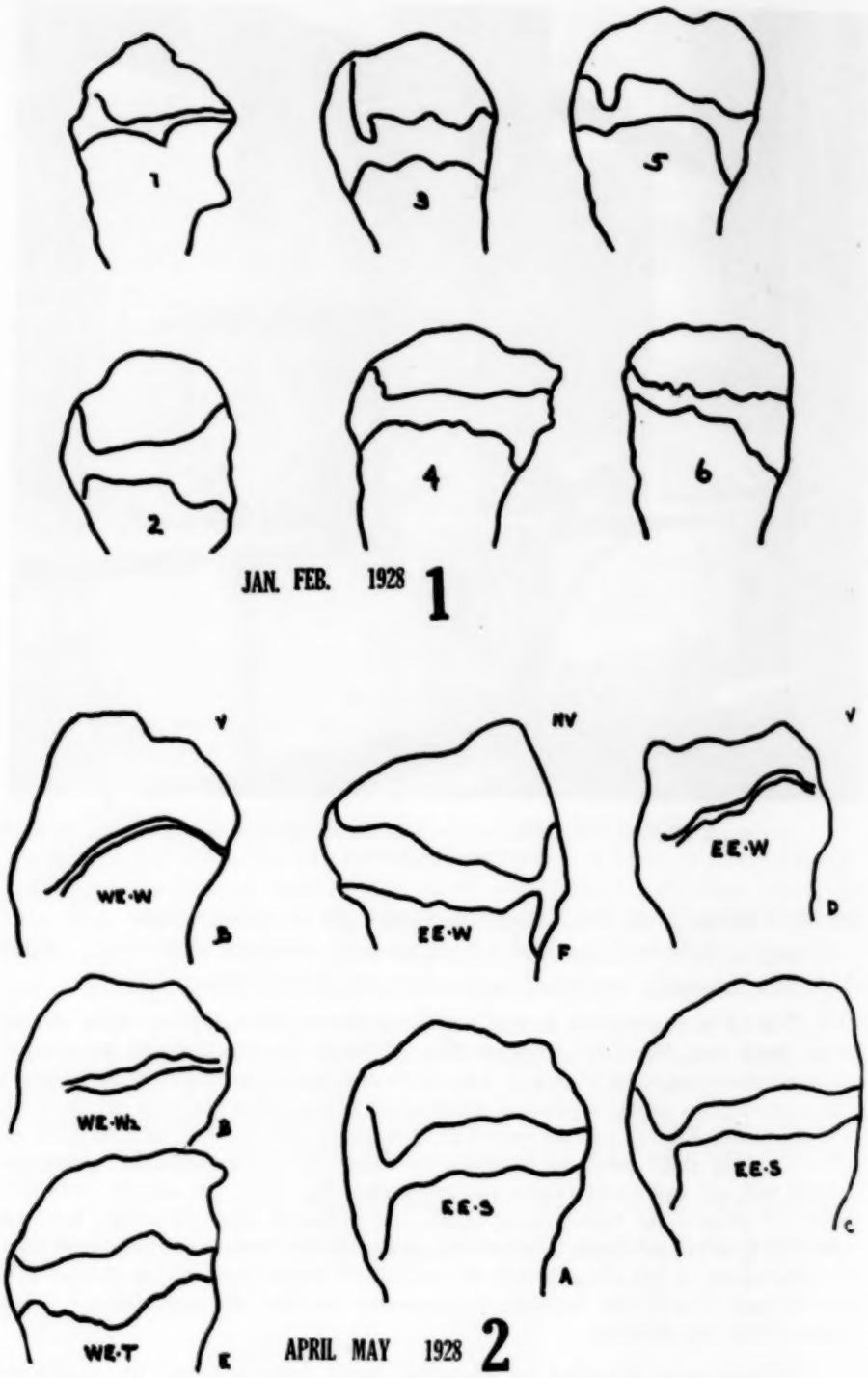
VITAGLASS EXPERIMENTAL WINDOWS IN LABORATORY OF TEACHERS COLLEGE, COLUMBIA UNIVERSITY

The shelf animals in the Vitaglass rooms got no protection.

Using a different method of measuring window efficiency, Janet Clark has[9] recently reported and commented as follows:

> A table of data obtained in this way on perfectly clear days at noon, during March, April and May, 1928, shows that although the intensity of ultra-violet irradiation increases from March to May, it is still necessary to sit about 15 hours at 5 meters from a north window of ultra-violet transmitting glass to get as much ultra-violet radiation as can be gotten by 2 minutes out of doors in direct sun at noon. . . . Any child going out of doors for recess, or any stenographer going out to lunch will get more ultra-violet radiation than she could get all day behind a window of ultra-violet transmitting glass. So although these materials have an undoubted field of usefulness in solariums, and probably in animal houses and zoos, it is unnecessary to put them in schools and offices where it would be cheaper and more efficient to send the individuals concerned out into the sunshine for a few minutes every day at noon.

Our tests are positive in showing that schoolrooms so equipped admit enough ultra-violet in winter months to heal or prevent rickets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EXPLANATION OF CHART II—SCHOOLROOM TESTS MADE IN BRONXVILLE, N. Y.

Series 1—The animals from which these bones were taken were placed in schoolrooms in positions similar to those that children occupied with the exception of No. 1, which was placed on the windowsill directly in the path of light. Specimens 1, 2, 3, 4 and 5 were all located in a room equipped with Vitaglass windows. Specimen 6 was in a room with similar light exposure but equipped with ordinary window glass. Note that during the period of exposure, from January 18, 1928, to February 16, 1928, the only rat in any way protected was No. 1, the rat directly in the path of the Vitaglass window rays.

Series 2—During May and June the tests were repeated at Bronxville with this modification. WE represents specimens from rats in a "western exposure" Vitaglass room. EE represents specimens from rats in an "eastern exposure" Vitaglass room, and in an "eastern exposure" ordinary window glass room, the right hand series being the Vitaglass room group and the middle series the window glass room group. The attached letters W, S and T indicate the position of the rat. The W specimen was on the windowsill in direct path of rays. The S and T rats were on shelf or table in same room but out of direct path of rays. Again only those animals in direct path of rays were protected and then only when in front of Vitaglass.

if weather is clear and exposure long enough; and that only that part of the room directly in the path of the rays receives this benefit. With these facts in hand it is for school boards to decide whether the benefits derivable justify the expense of installation. My own feeling is that schools and office buildings would invest their money more efficiently by equipping solaria, preferably with sky lighting and sex-segregated so that the needy cases could lie exposed for certain periods of the day to the full effect of the sun, with as little clothing as possible. I do see a place in homes and apartments for these glasses to permit mothers to save some hours of perambulation with the baby or chaperonage of small children.

The glasses are important inventions. It seems a pity to detract from their values and discourage their perfecting as aids to health by false claims or misdirected selling campaigns. Their purveyors will therefore do well to stress instructions as to where to install and how to use, rather than quantity sales, at least until the public is educated to their values and limitations.

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Longevity of Typhoid Bacilli in Cheddar Cheese*

A Study Following an Outbreak of Typhoid Fever Traced to Cheese

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CHEESE has been reported very rarely as a factor in the transmission of typhoid fever. The only prior epidemic of typhoid fever traced to Cheddar cheese that we have found is that which occurred in Michigan in 1917, and was reported by E. D. Rich[1] in 1923. In that epidemic there were 51 cases with 4 deaths. Two epidemics of gastroenteritis are reported by Linder, Turner and Thom,[2] a streptococcus pathogenic for cats being responsible; one was due to imported Albanian cheese and one to American Cheddar cheese.

During February, March and April of 1925, an epidemic of 29 cases of typhoid fever, with 4 fatalities, was reported from 8 sanitary districts of 4 counties in Minnesota. The first case developed symptoms February 2, and the last April 3.

Epidemiological investigations made by the department showed the source of infection to be cheese made in a coöperative cheese factory on January 11 and January 12. This cheese was noted by the cheesemaker as having what is commonly called "dead curd." The acidity of the milk could not be increased by any of the usual methods, and the result was a very soft cheese. As the creamery had many requests for fresh cheese, this lot was distributed as early as 10 days after making, instead of being held to ripen as is usually done.‡

The epidemiologist found evidence pointing to a carrier in the family of one of the contributing patrons of the cheese factory. Bacteriological findings confirmed this evidence. *B. typhosus* was isolated from 3 specimens of feces received from Mrs. B., age 57, who gave a history of having had typhoid fever in 1900.

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* Read before a Joint Session of the Laboratory and Food, Drugs and Nutrition Sections of the American Public Health Association at the Fifty-seventh Annual Meeting at Chicago, Ill., October 15, 1928.

† Resigned.

‡ On April 16, 1925, there was obtained, from one of the families in which typhoid fever occurred, a piece of cheese said to be part of this same lot. At this time, 95 days after manufacture, the cheese was very dry. The acidity was 0.95 per cent and no typhoid bacilli were isolated from it.

Cheese known commercially as Cheddar cheese is made from whole fresh milk. At this coöperative factory, the following method is used: The milk is kept at a temperature of 86° F. until the acidity has reached 0.20 per cent. This is hastened by adding commercial starter. When the correct acidity has been reached, coloring matter is added and also rennet (4–6 oz. per 100 lbs. milk). The milk thus treated is allowed to stand without agitation until the curd is firm, at which time it is cut into small cubes and the temperature gradually raised (1° in each 5 minutes) to 98° F. The cubes of curd are gently but continuously agitated to prevent their adhering to each other, until they have shrunk to half their original size and when squeezed together by hand will not adhere. The whey is then drawn off and the curd stacked to drain with temperature maintained at approximately 98° F. The curd is turned every 15 minutes until the cheddaring process is completed, at which stage it has become a homogeneous mass of a texture like chicken breast, and when held for an instant against a hot iron forms shreds 1 to 1½ inches long. This cheddared curd is then cut up fine; salt is added (35 gms. to 100 lbs.), the temperature lowered to 80° F.; and the curd put into the cheese press. On removal from the press, the cheese is dipped in paraffine and stored at about 60° F. to ripen.

Since cheese so seldom has been found to be the source of typhoid epidemics, it was thought desirable to attempt to find out what kills typhoid bacilli in Cheddar cheese, as there seems to be nothing in the heat used or the acidity developed during the process of manufacture which would necessarily destroy these organisms. With this in mind, 18 small cheeses were made following as closely as possible the above method. A galvanized iron pan 15″ x 10″ in a water bath served for a vat, and a cutting implement was improvised from sheet metal.

For each cheese made, 7 quarts of milk were used. This milk was infected, usually the evening preceding the making of the cheese, with 50 c.c. of an 18-hour broth culture of *B. typhosus*. For all the experimental work, the typhoid strain isolated from Mrs. B. was used. The milk was allowed to stand over night either in the icebox or at room temperature, according to the age of the milk, maximum multiplication of the bacteria without curdling being desired. The finished cheeses weighed about ¾ lb. each and were of good consistency.

For the most part, one cheese was made on each of 3 successive days, using the same lot of milk, which was kept in the refrigerator until needed. Raw milk was used for all except cheeses O, P, R and S, for which pasteurized milk was used. Samples for examination for *B. typhosus* were taken at different stages during the process of manufacture, and at frequent intervals afterwards. After sampling the cheese by means of a cork borer, the hole was thoroughly sealed with paraffine. All samples were plated on 8 plates of brom cresol purple lactose agar, typical colonies fished, checked for cultural characteristics on broth, milk, dextrose and saccharose broth, and for agglutinability with known positive serum.

Samples were taken from each cheese during the process of manufacture as follows: (1) before adding the starter, (2) before adding rennin, (3) as curd was forming, (4) after cutting curd (both whey and curd), (5) on completion of cheddaring (both whey and curd), (6) after salting, and just before placing in press. Samples were taken from the finished cheeses daily, except from cheeses H and K, until three consecutive tests failed to show typhoid bacilli. On cheeses H and K bacteriological tests were made daily for 16 days and then at intervals of 3 or 4 days until the 36th and 34th days, respectively.

Tests for acidity were made daily on all but the first seven cheeses. For all acidity tests of cheese, 5 gm. were emulsified in a mortar with 100 c.c. hot water; 25 c.c. of filtrate were titrated with $N/10$ NaOH, using phenolphthalein as indicator. Table I gives a summary of the cheeses made, the length of time in days that *B. typhosus* was found living in each cheese, and the acidity of the cheese when 1 day old, and when *B. typhosus* was no longer found. All determinations have not been shown, as they would make the table cumbersome.

In each cheese tested the increase in acidity was gradual and *B. typhosus* was continuously present up to the date of first negative findings except in the following 5 instances: In cheeses B, C and E, one examination only failed to show *B. typhosus* before obtaining the

TABLE I

LONGEVITY OF *B. typhosus* IN 18 EXPERIMENTAL CHEESES

Cheese	Date	Milk	Starter	*B. typhosus* Recovered During Mfg.	No. Days	Per Cent Acidity 24 hours	Per Cent Acidity Day 1st neg.
A	Oct. 29, 1925	Raw	Commercial	All Specimens	6		
B	Nov. 3, 1925	"	"	" "	6		
C	Nov. 4, 1925	"	"	" "	7		
D	Nov. 5, 1925	"	"	" "	4		
E	Dec. 8, 1925	"	"	" "	4		
F	Dec. 9, 1925	"	"	" "	2		
G	Dec. 10, 1925	"	"	" "	6		
H	Jan. 25, 1926	"	*S. lacticus*	" "	36*	.67	1.04†
K	Jan. 27, 1926	"	" "	" "	34*	.47	.72†
L	Feb. 23, 1926	"	Commercial	" "	3	.68	.83
M	Feb. 24, 1926	"	"	" "	1	.72	.79
N	Feb. 25, 1926	"	"	" "	0	.65	.65
O	April 7, 1926	Past'd	"	" "	6	.76	1.01
P	April 8, 1926	"	"	" "	1	.61	.98
R	June 22, 1926	"	*S. lacticus*	All except No. 5 whey	3	.72	.86
S	June 23, 1926	"	" "	All specimens	3	.81	.90
T	April 7, 1927	Raw	" "	All except No. 5 whey & curd	0	.83	.83
U	April 8, 1927	"	" "	All specimens	8	.58	1.15

* No later tests, cheese all used.
† Last day of test, *B. typhosus* still present.

3 consecutive negative results. In cheese R one colony of *B. typhosus* was obtained on the 3d day while *B. typhosus* was not found on the 1st and 2d days, and in cheese U no typhoid bacilli were recovered on the 1st and 2d days, but not on the 3d to 8th days, inclusive.

With the exception of cheeses H and K the duration of *B. typhosus* ranged from 0 to 8 days, averaging about 4 days. The acidity ranged from 0.61 to 0.83 per cent when 1 day old, to 0.72 to 1.15 per cent at the end of the tests. From cheeses H and K, *B. typhosus* was recovered on every test until no more material for testing was left, which was on the 36th and 34th days after manufacture, respectively. Cheeses H and K had acidities of 0.67 and 0.47 per cent, respectively, when 1 day old. Cheeses L and P had practically the same degree of acidity as cheese H, yet *B. typhosus* survived in them but 3 days and 1 day, respectively. At the end of the testing, cheese H had an acidity of 1.04 per cent and cheese K only 0.72 per cent, and yet *B. typhosus* was surviving in both, while in 9 other cheeses in which typhoid bacilli could no longer be found, acidities ranged from 0.65 to 1.15 per cent. No difference was noted in the consistency of the cheese in which *B. typhosus* lived the longest and those in which *B. typhosus* was recovered for only a short period or not at all.

To determine what influence the addition of acid and the cultivation of certain organisms commonly found in milk have on the destruction of typhoid bacilli, the following experiments were undertaken.

Experiment I—January 5, 1926, 9 flasks of milk, each containing 800 c.c., were sterilized by steaming 1 hour on each of 3 successive days. Acidity of milk after sterilizing was 0.162 per cent. To each of 3 flasks enough chemically pure lactic acid was added to bring the acidity to 0.22, 0.58 and 0.99 per cent respectively. To 2 flasks pure culture of *S. lacticus* was added; 1 flask was kept at room temperature; and 1 in the icebox. To 2 other flasks a pure culture of a diplococcus isolated from pasteurized milk was added. (This diplococcus referred to hereafter as diplococcus *X* was an enzyme producer and had been causing sweet curdling of the milk in a large milk plant.) One flask was kept at room temperature and the other in the icebox. The remaining 2 flasks were used as controls. All 9 flasks were inoculated with *B typhosus,* using for each flask 9 c.c. of an 18-hour broth culture. From time to time ½ c.c. quantities from each flask were plated on brom cresol purple lactose agar, characteristic colonies fished and verified for *B. typhosus.*

The flask in which the acidity with lactic acid was 0.99 per cent curdled at once and *B. typhosus* was recovered on the 2d day, but not on the 3d day or later. From the flask in which the acidity with lactic

acid was 0.58 per cent *B. typhosus* was recovered for 37 days. In process of handling this flask became contaminated and the acidity increased until on the 24th day it was 0.83 per cent and remained unchanged until the 40th day, when the testing was discontinued. The flask in which the acidity with lactic acid was 0.22 per cent increased in acidity to 0.45 per cent by the 13th day and was 0.56 per cent on the 71st day. Tests were made at intervals of 4 or 5 days and *B. typhosus* was last recovered 84 days after inoculation. On the following day the acidity was 0.61 per cent.

The flask inoculated with *S. lacticus* and left at room temperature was curdled 4 days after inoculation but *B. typhosus* was isolated that day. The next test was made on the 7th day and no typhoid bacilli were found at that time or on three successive tests made at daily intervals. The acidity on the 8th day was 0.89 per cent. The corresponding flask in the icebox increased in acidity very slowly, reaching 0.40 per cent on the 105th day, and *B. typhosus* was recovered 163 days after inoculation, when testing was discontinued.

The flask inoculated with diplococcus *X* and left at room temperature increased in acidity slowly until it reached 0.60 per cent on the 30th day and then remained unchanged. *B. typhosus* was isolated 54 days after inoculation, but was not isolated on the 56th day or later. The corresponding flask kept in the icebox reached an acidity of 0.45 per cent on the 71st day after inoculation, at which time *B. typhosus* was isolated. Unfortunately, it was not tested again until the 105th day, at which time the acidity was 0.75 per cent and no typhoid bacilli were found.

The control flask inoculated with *B. typhosus* only, and left at room temperature, became infected during handling and the acidity gradually increased until the 34th day after inoculation, when it was 0.87 per cent. On that day *B. typhosus* was recovered, but on the following day and later no typhoid bacilli were found. In the similar flask kept in the icebox *B. typhosus* was isolated periodically for 163 days after inoculation, at which time tests were discontinued. On the 105th day the acidity was 0.52 per cent.

Experiment II—A similar set of tests was made on January 18, 1926. Milk was obtained from a certified dairy on January 13; 800 c.c. placed in each of 9 flasks and steamed 1 hour on each of 3 successive days. Three flasks were acidified with c.p. lactic acid to give final acidity of 0.53, 0.71 and 0.93 per cent respectively, instead of the weaker acid reactions used in the first experiment. Two flasks were inoculated with *S. lacticus* and two with diplococcus *X*. The remaining 2 flasks served as controls. One of each of the last 3 pairs

was kept in the icebox and the other at room temperature. The *S. lacticus* and the diplococcus *X* were grown in sterile milk and 10 c.c. inoculated into each of the respective flasks. To each of the 9 flasks was added 10 c.c. of an 18-hour broth culture of *B. typhosus*.

The flask of milk made 0.93 per cent acid with lactic acid was tested daily and *B. typhosus* was recovered after 2 days but not on the 3d day or later. The milk made 0.71 per cent acid with lactic acid continued to show typhoid bacilli for 8 days after inoculation, but no typhoid bacilli were found later. The acidity tested on the 6th and 10th days was 0.70 per cent. The milk acidified to 0.53 per cent with lactic acid remained at that acidity for 22 days. On the 25th day, the acidity had increased to 0.78 per cent and a growth of small acid producing colonies appeared on the plates in addition to the typhoid colonies. *B. typhosus* was last isolated 30 days after inoculation, but only 5 days after acidity was found to have reached 0.78 per cent, and at most 8 days after acidity rose above 0.53 per cent.

The milk inoculated with *S. lacticus* and left at room temperature increased rapidly in acidity, daily readings for the first 5 days being 0.45, 0.68, 0.77, 0.81 and 0.84 per cent respectively. *B. typhosus* was isolated daily for 5 days but not on the 6th day or later. The similar flask of milk kept in the icebox increased slowly in acidity, reaching 0.65 per cent 27 days after inoculation, at which time *B. typhosus* was last isolated. The flask of milk inoculated with diplococcus *X* and left at room temperature increased in acidity slowly at first, reaching 0.55 per cent on the 16th day. Then the acidity increased rapidly, to 1.04 per cent, 34 days after inoculation, at which time *B. typhosus* was recovered. On the following day and later no typhoid bacilli were found. The similar flask kept in the icebox increased gradually in acidity, reaching 0.62 per cent on the 60th day and 0.88 per cent on the 90th day. *B. typhosus* was isolated on the 86th day after inoculation, but not on the 92d day or later.

In the control flask inoculated with *B. typhosus* only and left at room temperature the organisms survived 129 days after inoculation and in the one in the icebox 151 days, when tests were discontinued.

Experiment III—Four flasks of milk, sterilized as in the previous experiment, were acidified January 25, 1926, with lactic acid to make the final readings 0.74, 0.78, 0.81 and 0.90 per cent acid, and then inoculated as before with *B. typhosus* and tested daily. *B. typhosus* was recovered after 1 day only from the milk made 0.90 per cent acid and after 4 days from each of the other 3 flasks.

It appears from these three experiments with milk that an acidity of about 0.70 per cent continued for a few days is deleterious to ty-

phoid bacilli, but in 1 flask of milk in the first experiment, *B. typhosus* survived an acidity of 0.80 per cent for 13 days and in the second experiment an acidity of 0.92 to 1.04 per cent for 7 days. In the first case an acid producing organism was growing in the milk and in the second case an enzyme producer had been cultivated along with the typhoid bacilli.

From these tests it seemed probable that the type of bacteria growing in milk or cheese had an influence on the length of life of *B. typhosus,* either through some undetermined chemical change or through the kind of acid produced. Since it was not practicable to test the various flasks of milk and the cheeses for all the acids present, it was decided to test the longevity of *B. typhosus* in the presence of the different acids commonly found in cheese—lactic, butyric, acetic, propionic, and caproic. For this test 16 flasks were prepared each containing 600 c.c. sugar free broth pH 7.2. It was planned to use 1 flask for control and 3 flasks for each acid, sufficient acid to be added to make acidity titrated with *N*/10 NaOH read 0.70, 0.85 and 1.00 per cent, respectively. The available supply of propionic and caproic acids was insufficient to procure quite the concentration of acidity desired. After the reactions were adjusted *B. typhosus* was added, using 8 c.c. of an 18-hour broth culture for each flask. Plates and subcultures were made daily until at least two consecutive sterile tests were obtained. The actual titrations and results are given in Table II.

These tests show a striking difference in the effect of different acids and indicate that caproic acid is much the most detrimental to *B. typhosus,* as this organism does not survive a concentration of 0.70 per cent for 1 day, whereas it survives acetic acid in a concentration of 0.73 per cent for 4 days and of 1.00 per cent for 1 day.

The shorter life of the typhoid bacilli in broth to which lactic acid is added, than in milk with the same percentage of lactic acid, is probably due to the combination of some of the lactic acid with the casein, there being left only a portion of the total acid free to act upon the organisms, as pointed out by Zae Northup[8] in a study of the influence of the products of lactic acid on *B. typhosus.*

In order to determine the effect of diminution of free access of air on the life of *B. typhosus* in cheese, the following experiment was undertaken:

On April 1, 1926, cheeses L, M and N, which had been made February 23, 24 and 25, respectively, and from which *B. typhosus* no longer could be recovered, were ground in mortars. To 50 gm. of each cheese was added 10 c.c. broth culture *B. typhosus,* and the whole emulsified. Instead of putting in presses, these samples were left at

TABLE II

COMPARATIVE BACTERICIDAL EFFECT OF VARIOUS ACIDS ON *B. typhosus*

No. Days	lactic 0.713%	butyric 0.705%	acetic 0.73%	propionic 0.716%	caproic 0.70%
1	+	+	+	+	−
2	−	+	+	+	−
3	−	−	+	+	
4		−	+	−	
5			−	−	
6			−	−	
No. Days	lactic 0.849%	butyric 0.856%	acetic 0.875%	propionic 0.80%	caproic 0.80%
1	−	−	+	+	−
2	−	−	+	+	−
3	−		−	+	
4			−	−	
5				−	
No. Days	lactic 1.01%	butyric 1.02%	acetic 1.00 %	propionic 0.94%	caproic 0.86%
1	−	−	+	+	−
2	−	−	−	−	−
3	−		−	−	

room temperature in tumblers, covered with glass Petri plates and tested daily for *B. typhosus*. The samples, of course, became very mouldy but *B. typhosus* was isolated for 16 days from one sample and for 13 days from each of the others. The acidities of the cheeses before emulsifying were 1.15, 1.19 and 1.04 per cent, respectively. Table III shows the changes in acidity and the bacteriological findings on the daily tests.

The remainder of cheeses L, M and N was mixed and emulsified with *B. typhosus* broth culture, using 450 gm. of cheese and 100 c.c.

TABLE III

LONGEVITY OF *B. typhosus* IN INOCULATED CHEESE WITH AND WITHOUT ACCESS OF AIR

	Exposed to Air						Air Excluded	
No.	Cheese L		Cheese M		Cheese N		Cheeses L M N after Pressing	
Days	% acid	*B. typhosus*	% acid	*B. typhosus*	% acid	*B. typhosus*	% acid	*B. typhosus*
1		+		+		+		+
2	0.83	+	0.72	+	0.69	+		+
3		+		+		+	0.98	+
4		+		+		+		+
5	0.90	+	0.72	+	0.76	+		+
6		+		+		+		+
7		+		+		+		+
8		+		+		+		−
9	1.12	+	0.94	+	0.97	+		−
10		+		+		+		−
11		+		+		+		
12		+		+		+		
13		+		+		+		
14		+		−		−		
15		+		−		−		
16		+		−		−		
17		−						
18		−						
19		−						

of culture. This emulsion was then packed in the cheese press, at which time the acidity was 0.97 per cent, and when removed from press the following morning the cheese mixture was dipped in paraffine. Samples were taken daily by means of a cork borer. *B. typhosus* was recovered for 7 days only. At the beginning of the tests the acidity of the mixture was higher for some unexplained reason than that of the individual samples, and the shorter length of life of *B. typhosus* may have been due to the acidity rather than to the partial exclusion of air. However, the sample of cheese L emulsified and left in the tumbler developed an acidity of 1.12 per cent by the 9th day and *B. typhosus* lived for 6 days thereafter, whereas the acidity of the mixture of the three cheeses at no time exceeded 0.98 per cent. The variation in the type of bacteria multiplying under the two conditions may also have had an influence on the survival of the typhoid bacilli.

This investigation has raised many questions that need further study, both from a chemical and from a bacteriological point of view.

SUMMARY AND CONCLUSIONS

1. Reference is made to an epidemic of typhoid fever traced to Cheddar cheese made at a factory, one of whose contributing patrons was proved to be a typhoid carrier.

2. The cheese in question had been made from milk which would not curdle satisfactorily. This would indicate an unusual bacterial flora resulting in a changed chemical condition.

3. The development of cases in the epidemic indicates that *B. typhosus* lived in the cheese approximately 63 days.

4. Eighteen experimental lots of cheese made from milk infected with *B. typhosus* contained the organisms on the day of manufacture.

5. The experimental data indicate that usually, in the ordinary course of ripening, *B. typhosus* cannot be recovered from Cheddar cheese after the 8th day. However, 2 of the 18 cheeses harbored *B. typhosus* for 34 and 36 days, respectively.

6. Since the two cheeses in which *B. typhosus* lived 34 and 36 days, respectively, were made from the same lot of milk, it is probable that the longevity of *B. typhosus* in Cheddar cheese is influenced by the bacterial flora of the milk. Two instances in the milk experiments gave comparable results and seem to substantiate the same probability.

7. The experimental data indicate that the degree of acidity and the character of the acid present are important factors in the destruction of *B. typhosus* in cheese. However, a specific acidity will not uniformly result in the destruction of this organism in cheese. This is probably because different acids do not affect the organism to the same degree and also because the bacterial flora of the milk and the complex chemical constituents of cheese may counteract the effect of the acidity differently in different lots of cheese.

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Geographic Distribution of Deaths from Diphtheria*

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AN attempt has been made to study the geographic distribution of diphtheria deaths during the last two years (1926 and 1927) based primarily upon records of the industrial policy holders of the Metropolitan Life Insurance Company. During 1927 there was an increased prevalence of diphtheria which, except for limited areas, appeared to spread quite generally over the United States and Canada. The extent of this increase, so far as the Metropolitan experience is concerned, is indicated in Table I.

TABLE I

DEATH RATES PER 100,000 FROM DIPHTHERIA. METROPOLITAN INDUSTRIAL POLICY HOLDERS AND U. S. REGISTRATION STATES, AS OF 1910. TOTAL PERSONS, ALL AGES

Year	Metropolitan	U. S. Reg. States, as of 1910	Year	Metropolitan	U. S. Reg. States, as of 1910
1927	10.6	*	1918	19.3	14.7
1926	9.7	7.4	1917	24.6	16.5
1925	10.6	7.9	1916	21.0	13.9
1924	13.1	10.4	1915	21.4	14.5
1923	15.5	12.9	1914	25.7	17.2
1922	18.0	14.4	1913	27.2	18.2
1921	23.8	17.7	1912	24.5	16.9
1920	22.1	15.9	1911	27.3	17.9
1919	20.9	15.9			

* Not yet available.

It will be observed in the Metropolitan experience that the consistent decline year by year since 1921 from the high point of 23.8 was broken in 1927, when the rate of 9.7 for 1926 was succeeded by an increase to 10.6 per 100,000. This table also indicates the diphtheria rates from 1911 to 1926 for the U. S. Registration States, the 1927 figures not being, as yet, available. In all probability, however,

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the 1927 rate will show a material increase for the registration states over 1926. We have, in fact, an estimate made by the Surgeon-General of the U. S. Public Health Service, reported to us by the Health Department of Virginia, in which preliminary reports for 1927 for the U. S. Registration Area indicate an increase in diphtheria deaths of approximately 17 per cent over 1926.

Another indication of the increase in diphtheria in 1927 is to be found in the American Medical Association report on diphtheria mortality.[1] Table II presents certain figures from this report:

TABLE II

DIPHTHERIA DEATH RATES PER 100,000 POPULATION IN CERTAIN STATES AND IN URBAN AREAS BY GEOGRAPHICAL DIVISIONS, 1926 AND 1927

	1927	1926
Colorado	9.1	9.2
Maine	+ 3.8	2.5
Maryland	+ 7.4	6.2
Massachusetts	+ 6.3	5.9
Minnesota	3.0	5.9
Montana	+ 2.8	2.6
New York	+ 8.6	6.4
Pennsylvania	+ 8.5	8.3
Wyoming	4.6	5.5
Cities in:*		
New England	+ 8.8	6.8
Middle Atlantic	+ 11.8	9.2
South Atlantic	+ 7.5	6.4
East North Central	+ 13.3	12.8
East South Central	+ 7.6	6.8
West North Central	5.6	10.0
West South Central	+ 11.2	7.8
Mountain and Pacific	5.9	7.2

* Cities of 100,000 population and over

It will be noted that for the 9 states for which figures were available at that time, all but 3 showed varying but, for the most part, small increases in rates. The 3 showing decreases (Colorado, Minnesota, and Wyoming) are all western or northwestern states. For the cities over 100,000 population, grouped by geographic grand divisions, there are increases recorded except in the Mountain and Pacific Group and the West North Central Group (cities in Minnesota, Iowa, Nebraska, Kansas and Missouri).

Ordinarily, such a small rise in the mortality from *any* disease would be in nowise disconcerting. But, in the case of diphtheria, it may be of decided importance for the following reason: For each of the 5 years immediately preceding 1927, a new minimal diphtheria death rate was in evidence. During this continuous decline the diph-

theria mortality rate among Metropolitan industrial policy holders dropped 60 per cent, and in the registration area 58 per cent. This continuous decrease is considered one of the outstanding public health accomplishments of the current decade. It was naturally expected to continue as the period was contemporaneous with an increasingly intensified campaign for immunization of children against diphtheria—and, to our knowledge, there was no relaxation in that campaign during 1927. We regard even this small increase in the diphtheria death rate as an important point of inquiry for the public health workers of America, to determine where the increase has occurred, and more particularly, the relative relationship of those localities where immunization campaigns have been especially active and persistent.

A more detailed analysis of the Metropolitan experience, based on total mortality figures, and not rates, discloses the following facts: In 1926 in this group of more than 18,000,000 industrial policy holders, there were 1,689 deaths from diphtheria; in 1927 there were 1,884 deaths—an increase of 195 deaths, or 11 per cent. This increase is materially in excess of the increase in numbers of policy holders, as demonstrated by the rate increase in Table I.

For business, administrative, and statistical purposes, the Metropolitan field work is organized on a territorial basis. When the diphtheria experience for these 2 years is analyzed according to territories, it is found that certain territories (5 in number) have more or less marked increases, while others, not listed below, remain practically stationary, and 2 territories show decreases. The striking increases are as follows:

	Increase
Metropolitan Territory (including Greater New York and Westchester County)	193 to 256
Middle West Territory (Illinois and Indiana)	149 to 185
Keystone Territory (Pennsylvania)	151 to 172
Atlantic Coast Territory (Delaware, District of Columbia, Maryland, New Jersey and Virginia)	123 to 196
Canadian Territory (8 Provinces including Quebec)	185 to 259

The 2 territories showing decreases are as follows:

	Decrease
Northwestern Territory (Iowa, Michigan, Minnesota, Nebraska and Wisconsin)	218 to 153
Pacific Coast Territory (California, Colorado, Idaho, Montana, Oregon, Utah and Washington)	136 to 104

A further analysis of certain of these increases, particularly in the Metropolitan and Middle West Territories, discloses data of interest. The Middle West, increasing from 149 to 185, is made up of 2 states, 1 of which, Indiana, showed a decrease from 32 to 22, while Illinois jumped from 117 to 163. Further analysis indicates that this in-

crease was entirely confined to Chicago. The number of deaths in Chicago in 1927 increased over 1926 from 84 to 136—an increase of 52, or 62 per cent. In the rest of the state there was actually a decrease from 33 to 27 or an improvement of 18 per cent.

If a parallel contrast is drawn between the Metropolitan Territory (New York City and environs) and New York State, comparable and similar observations result. In the Metropolitan Territory the increase was from 193 to 256, an increase of 63, or 33 per cent. In New York State, exclusive of New York City, the increase was from 60 to 63—3 deaths, or 5 per cent. The increase for the state and city combined was 26 per cent.

From this analysis it would appear that in these 2 territories, showing marked increases, the augmented diphtheria mortality was an urban affair. As a matter of fact, combining the increase for New York City and Chicago gives a total of 115 deaths, or 59 per cent of the total increase in the Metropolitan experience. Still further contrasting this urban and rural picture, the combined mortality for the 4 cities showing the highest increases in the Metropolitan experience (New York, Chicago, Pittsburgh and Montreal), approximates 88 per cent of the total increase (172 deaths).

It seems probable that a further analysis of the registration area figures, when they are available, will support this rural-urban contrast. This is borne out by such information as is now obtainable. Data for both cases and deaths for 1926 and 1927, for the general population of New York City and for the rest of the state, are given in Table III.

TABLE III

DIPHTHERIA CASES AND DEATHS, 1926 AND 1927—NEW YORK CITY AND REST OF NEW YORK STATE

		1926	1927	Increase	Per Cent Increase
City	Cases	7,800	13,507	5,707	73.2
	Deaths	477	717	240	50.3
Rest of State	Cases	3,628	3,914	286	7.9
	Deaths	251	265	14	5.6

From this it will be observed that in the city cases increased 73.2 per cent, whereas in the rest of the state the increase was only 7.9 per cent. Deaths increased 50.3 per cent, whereas upstate the increase was but 5.6 per cent.

Data furnished by Dr. Rawlings of Illinois, contrasting Chicago with the rest of the state, bring out the same picture:

TABLE IV

DIPHTHERIA CASES AND DEATHS, 1926 AND 1927—CHICAGO AND REST OF ILLINOIS

		1926	1927	Increase	Per Cent Increase
Chicago	Cases	2,551	4,124	1,573	61.6
	Deaths	224	442	218	97.3
Rest of State	Cases	1,978	2,148	170	8.6
	Deaths	186	205	19	10.2

It is noted that in Chicago cases increased 61.6 per cent, whereas in the rest of the state the increase was but 8.6. Deaths increased 97.3 per cent, whereas in the rest of the state the increase was but 10.2.

A further glance at the Company territorial decreases discloses the fact that in the Pacific Coast Territory the decrease was more or less general throughout the states and sub-divisions. This corresponds with the experience of the general population as indicated in the data presented in Table II. As shown in that table, the only states showing decreases and the only groups of cities showing decreases, except those in the West North Central section, are Mountain or Pacific states and cities.

The other territory showing a decrease was the Northwestern Territory. When this decrease is analyzed by states, the only striking contrast is that of Michigan where the decrease was from 149 to 99. If the experience of this state is further analyzed, it is found that an essential part of this decrease was in Detroit (from 108 to 79, or 29 per cent). This decrease represents 58 per cent of the total state decrease and 45 per cent of the total decrease for the entire Northwestern Territory.

Is it possible to hazard any surmises as to the etiological factors in this picture? We of course do not know how many or what factors may have been responsible for the increased mortality that affected large portions of the country, and that obviously were especially manifest in the very large centers of population. Why did the outbreak of 1927 apparently especially affect the large cities? Why was it essentially, so far as our records go, an urban affair? Does this condition reflect, probably among other influences, contrasts in relative percentages of immunity on the part of the childhood population? It must be remembered that the areas referred to as "rural" are so only by contrast to the great metropolitan areas. They contain, of course, small towns and cities.

There would seem to be some evidence to indicate that the prob-

able percentages of population immune as a result of the relative effectiveness of recent efforts at immunization, may be a factor in these contrasts. Taking New York State and City, for instance, it is a well-known fact that during the last 2 years at least, immunization with toxin-antitoxin has been more extensive upstate than in the city. In New York City the Health Department figures indicate a total of 30,024 children immunized by the department in 1926, and approximately 82,000 immunized in 1927. Of course, it is recognized that many of those immunized in 1927 would not have developed their immunity sufficiently early to combat the epidemic of that year. Nevertheless, the total of 112,024 immunized in the 2 years indicates the volume of work done. This can be measured against a general estimated population of 5,970,000. It does not, of course, include immunizations by private physicians.

In contrast, in the upstate area, the Health Department has a record of 118,220 children immunized in 1926 and 211,013 in 1927, or a total of 329,233 against an estimated population of 5,495,000. It is generally conceded that during the last two or three years in the upstate area, more immunization work has been done; a larger percentage of preschool children has been reached; and more work in particular has been carried out in the small town and semi-rural areas. The evidence would be more convincing if there were available reliable estimates as to the actual percentage of the childhood population now immune in these 2 areas.

Figures for Chicago and the rest of Illinois apparently indicate the same tentative conclusions. The State Department of Health *Monthly Bulletin* for May may be quoted as follows:

> Leaving Cook County out of consideration, Illinois experienced its lowest loss from diphtheria last year. Forty-four counties escaped without a single death from this cause and the loss suffered by the others amounted to 150 fatalities compared with 160 in 1926. This amounted to a 6 per cent decline in the number of deaths, and gave a rate of 3.9 per 100,000 population. In 1926 the rate was 4.3 for the state outside Cook.
>
> Including Cook County the state suffered an increase of 57 per cent in mortality from diphtheria during 1927. There were 30 counties in which increases were observed but the rise of 98 per cent in Cook County was by far the most important factor in making the state average greater. . . .
>
> While no very accurate analysis of the data has been made it appears certain that the use of toxin-antitoxin has been promoted on a much larger scale in the northern and southern counties than in the central section of the state. Work in the southern territory has been particularly noticeable, and apparently it has appealed to the public there in a more practical way than elsewhere. In a number of communities toxin-antitoxin has been given to practically the whole susceptible population. Doubtless this has been an important factor in the favorable experience with diphtheria.

We previously pointed out that the decrease in the Northwestern Territory, and particularly in Michigan, was to be accounted for largely by the decrease in Detroit. While definite statistical conclusions cannot be drawn from the experience there, the general impression of health authorities in that city would seem to reflect the foregoing observations as to the apparent relative protection resulting from a notable if not unique urban immunization effort in that city.

A report furnished by Dr. Buck of the Detroit Health Department indicates that during 1926 and 1927, 144,691 children were immunized, which brings the total immunized in that city since 1921 up to 181,294, measured against an estimated population in 1927 of

TABLE V

DIPHTHERIA—NEW YORK STATE EXCLUSIVE OF NEW YORK CITY

	Per 100,000 Population		Per 100 Cases
	Case	Death	Fatality
1920	190	18.8	9.9
1921	250	17.0	6.8
1922	161	12.4	7.7
1923	111	8.8	7.9
1924	127	8.2	6.4
1925	92	7.2	7.8
1926	69	4.7	6.8
1927	78	4.9	6.3
1928	63	5.0	7.8

1,334,500. Even when corrections are made for overlappings and graduations from one age group to another, it is estimated that the percentage of children under 11 years now immunized in Detroit is approximately 57—the highest recorded percentage for any large city, so far as we know.

Another state which has a rather unusual record in immunization work within the last 2 years is Virginia. During the latter part of 1926 and early part of 1927, 200,000 children were immunized in Virginia at clinics organized by the State Department of Health. The department estimates that at least 40 per cent of the childhood population of Virginia has been protected, and believes that this has had a very determining influence in effecting a decline of 20 per cent in the death rate, and 38 per cent in the case rate from diphtheria during the last year.

The foregoing observations on New York, Illinois, Detroit and Virginia, while not conclusive, are nevertheless decidedly encouraging

in reflecting, as they apparently do, the protection which relatively extensive immunization gave the childhood population against a practically nation-wide increase in the disease.

The only records we have immediately available for 1928 are the Metropolitan industrial policy holders' figures and the records for upstate New York. So far as the Metropolitan experience is concerned, the wave of diphtheria characterizing 1927 seems to a degree to have persisted during the first half of 1928. On September 22, however, the cumulative rate for 1927 was 9.2 per 100,000, whereas on the same date in 1928 it was a fraction below the 1927 figure. The tendency has been in the direction of a lower rate and it is hoped that the 1928 figure may fall still further below the 1927 record.

In New York State, exclusive of the City, the number of cases reported in 1928 was slightly below the 1927 figure for the first half of the year. The fatality rate is, however, somewhat higher, making the death rate approximately the same. Figures from 1920 to 1928 inclusive, comparing the first half of these years, are given in Table V, as prepared by the New York State Department of Health.

What is needed in the campaign for diphtheria prevention is a more intensive and effective effort to immunize a large percentage of the childhood population, to reach a relatively much greater percentage of preschool children, and to carry out the program at least as effectively and extensively in the great centers of population as has been demonstrated to be feasible in the smaller population areas. Furthermore, the 1927 experience, as implied previously, seems to constitute a problem worthy of further study and analysis by interested health agencies.

REFERENCE

1. Diphtheria Mortality in Large Cities of the United States in 1927. Fifth Annual Report. *J. A. M. A.*, May 19, 1928, p. 1621.

The Industrial Viewpoint of the Phenol Waste Disposal Problem*

FRANK F. MARQUARD, C. E., M. E.

Carnegie Steel Company, Clairton, Pa.

MY first experience with phenol contaminated waste waters polluting the streams dates back to 1906 when we had a complaint from the New Castle, Pa., Water Works, located on the Shenango River about 20 miles south of Farrell, Pa.

We had 212 by-product coke ovens at Farrell which began operating in 1903 and were dismantled in 1923. We made no effort to treat the phenol water from this plant for the first three years of operation. The taste in the river water was pronounced only occasionally, usually in the winter after ice had covered the river and prevented oxidation.

After extended investigations it was concluded that this water could not be treated commercially with sufficient assurance of removing all the taste producing acids, so that it would be clean enough to put into the river. Very accurate records were kept on the taste of the water supply of New Castle, as the taste was occurring too frequently.

In 1906, Dr. Unger, of the Research Bureau, of the Carnegie Steel Company, came to Farrell and conducted a series of tests but could not find any practical solution for our trouble. It was then that I suggested the use of this contaminated water for quenching our coke and for the building of a return quenching system. Only about 20 per cent of the water which is put upon the hot coke is evaporated and the rest runs off the coke as hot contaminated water; so we had to construct large sumps to keep this return contaminated water from entering the sewer. This opened up another problem, for this returned waste water was polluted with fine coke dust. In order to get a maximum settling we were obliged to construct large settling basins; but even with these we found that a considerable amount of fine coke dust was carried along into our circulating pumps and cut out our impellers so rapidly that we were forced to re-design our centrifugal pumps to reduce this excessive abrasion of the impellers. We also discovered that the rapid circulating of the returned quenching water heated the water to almost a boiling temperature, so that we lost the

* Read before the Public Health Engineering Section of the American Public Health Association at the Fifty-seventh Annual Meeting at Chicago, Ill., October 18, 1928.

suction of our pumps, necessitating the lowering of these circulating pumps to a level assuring us a constant suction head of at least 5 feet.

The rapid accumulation of coke dust in our sumps necessitated the development of a means for removing this dust without stopping the quenching operation. We found that the best way to clean out these sumps was by the use of a locomotive crane and clam shell bucket which lifted out the dust without emptying the water from the sump.

These sumps were subsequently designed with a capacity sufficiently large to allow at least a carload of coke dust in the settling compartments and of such dimensions that a locomotive crane operation could be efficiently used.

We also found that in order to have a uniform quality of quenching water it was necessary to have all of our contaminated waste waters led to one central mixing tank and any make-up fresh water that was required would be added to this central mixing tank. This latter development was applicable to a larger sized plant, such as we now have at Clairton, Pa., where there are 10 quenching stations. The Clairton By-Product Coke Plant has a daily coking capacity of 30,000 net tons of coal per day.

The Clairton plant is located several miles above the McKeesport City water intake, and it was imperative that this river water, because it had practically no opportunity of purifying itself by stream oxidation, be free from phenol pollution.

Thus having worked out the mechanical arrangement to handle this contaminated waste water, with a closed quenching system at each quenching station, we were certain that we could evaporate all of our contaminated waste waters by the quenching of the hot coke. It was discovered, however, that the phenol in the waste waters was not so much the cause of any great trouble around our plant, but because of the large amount of chlorine on our coal, our ammonia still waste waters were heavily charged with calcium chloride, which was formed in our ammonia stills by the use of milk of lime to free the ammonia from the ammonium chloride. It is this calcium chloride, which builds up to 2½ per cent in the quenching waters, that has given us the greatest amount of trouble, due to its corrosive nature.

The quenching machines, rails and steel work around the batteries, and in fact all over the plant, are subjected to an abnormal rusting action, for the steam generated in the quenching operation carries a considerable amount of calcium chloride mechanically, and sprays the corrosive vapor over wide areas.

While we have solved the problem of the disposal of this taste producing contaminated waste water, as far as preventing its dis-

charge into the stream, it has not been in a manner that will eliminate a source of great expense and plant atmospheric nuisance.

We find a very pronounced odor to the coke quenched by this contaminated water, and while this odor does not affect the use of this coke for metallurgical purposes, it does interfere to some extent with its sale for domestic use, and the calcium chloride, being hydroscopic, makes it difficult to secure the low moistures in the coke secured by fresh water quenching. The excessive corrosion from the quenching with the calcium chloride water may be caused by the formation of some free hydrochloric acid.

For a good many years, we have been working on the problem of economic recovery of the phenols from the ammonia still waste, and recently considerable progress has been made; in fact, some plants have secured an efficiency of 90 to 95 per cent removal, and with this degree of refinement it is possible to discharge treated effluent into the streams at such a dilution that no taste trouble will occur.

The large percentage of by-product coke plants of this country are built with direct system of ammonia recovery. By this means the average coals will produce 20 gallons of ammonia still waste per ton of coal coked. This water comes from the free and fixed water in the coal. Plants using washed coal with a free water content of 8 per cent and 5 per cent fixed water will have about 28 gallons of ammonia still waste per ton of coal; while plants using the indirect system of ammonia recovery will have about 90 gallons per net ton.

Since the evaporation by hot coke quenching requires 70 to 80 gallons of water per net ton of coal coked, it is apparent that by the use of the indirect system of ammonia recovery we will produce about 10 per cent more still waste from this source alone than can be evaporated by the coke produced. But in the direct ammonia recovery system, such as we have at Clairton and in about 80 per cent of the by-product coking capacity of this country, it is possible not only to evaporate all of the still waste produced, but an additional amount of 60 gallons per net ton of coal coked; so that we are able to take all of the benzol plant contaminated waste water, in addition to all of the final direct cooler water, as well as all of the ammonia still waste.

Table I shows the amount of contaminated waste water coming from the three principal sources of a by-product coke plant of the direct ammonia recovery system and complete benzol recovery and refining operations; also the analysis of the contaminated water from each of these three sources.

From these figures it is apparent that a coke plant produces some contaminated waters which are practically free from phenols, such as

TABLE I

CONTAMINATED WATER DISPOSED OF DAILY BY CLAIRTON BY-PRODUCT COKE PLANT
Capacity of Plant 30,000 N. T. Coal per 24 Hours

Contaminated Water	Gals. Per Day	Gals. per Net Ton Coal	Contamination	Method of Disposal	Remark
Still Waste	600,000	20	Phenols, Cyanides, Tar and $CaCl_2$	All used for coke quenching	No connection to sewer
Benzol Sump	300,000	10	Benzol, Wash Oil and Naphtha	Recirculated	"
Final Cooler	1,500,000	50	Phenols, Cyanides, Tar and Naphtha	Recirculated and excess used for quenching	"

Total water evaporated—2,400,000 gallons

ANALYSIS OF CONTAMINATED WATER

Still Waste	GPL	Benzol Sump Water	GPL	Final Cooler Water	GPL
Phenols	2.00	Benzol	2.00	Phenols	0.28
Cyanides	0.50	Wash Oil	4.00	Cyanides	0.10
Tar Oils	1.00	Naphthalene	0.50	Tar Oils	0.30
Calcium Chloride	16.00			Naphthalene	1.00

the 10 gallons per ton of coal coming from the benzol plant; these waters are contaminated with benzol, wash oil and naphthalene, so that in either case, whether the phenols are extracted or not, the remaining source of taste producing contaminated waters may be objectionable for discharge into the streams and should be evaporated by hot coke quenching in a closed quenching system.

I might mention that the Clairton By-Product Coke Plant is not only the largest plant of its kind in the world, but it is operating on 100 per cent high volatile Pittsburgh coals, containing a high percentage of tar and very high chlorine content. Our frequent checking system by sampling indirect condenser water for tastes enables us to discover the slightest leaks from our condensers; permitting us to operate this large by-product plant full capacity for the past 10 years, without discharging any phenolated waste waters into the stream.

Some day it may develop to be a profitable operation to extract the phenols from the ammonia liquor so that this liquor free from phenols can be put into the streams. In this event, a very large amount of corrosion coming from the calcium chloride could be eliminated, as the calcium chloride free from phenols may be disposed of in the streams. The remaining source of phenol and benzol contaminated water could continue to be used as quenching water, and evaporated.

NOTE: W. L. Stevenson, Chief Engineer of the Sanitary Water Board of the Health Department of the State of Pennsylvania, has given untiring effort and coöperation, and the Carnegie Steel Company officials, as well as all of those associated in the Clairton operation, have spared no expense in their efforts to obtain a satisfactory solution of this most perplexing problem in the by-product coking operations.

Common Interest Problems of State Directors of Public Health Nursing*

EVA F. MacDOUGALL, R. N.

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IN Indiana we try to serve all groups of public health nurses, those employed by unofficial as well as by official health agencies. This means that school nurses, tuberculosis nurses, city health department nurses, bedside or visiting nurses, and industrial nurses come under our observation. The only other advisory nurses in the state are a nursing field representative employed by the American Red Cross and two district advisory nurses, one employed by the Metropolitan Life Insurance Company and the other by the John Hancock Life Insurance Company.

In our relation to these groups of nurses, the most important problems confronting state directors are:

1. To get the right nurse in the right position. Placement work is one of the most important tasks of a director. It enables her to insure the right standards of public health nursing in a service from the beginning.

2. To maintain good nursing technic. Since the nurse is a teacher, and her every nursing procedure is usually carefully observed by imitative children or adults, she cannot afford to be lax on this score, even though the fundamental principles of asepsis were not involved.

3. To make sure that the nurse's visit shall be packed with sound education. For instance, advocating more home calls to a school nurse means nothing if she only steps to the door and tells a mother that her son's tooth is decayed and then departs. There is a scientific plan for the essential content of a home nursing visit which the nurse must understand thoroughly.

4. To see that the nurse knows how to form her program in a systematic manner to meet the needs of her community, instead of proceeding each day without any preconceived plan.

5. To make sure that the nurse closely adheres to her medical ethics. There is no type of nursing which taxes a nurse's knowledge of medical ethics and judgment in practicing it, as does public health nursing, where in the daily round of her duties she comes in contact with the patients of not only every physician in the community but of every quack as well.

6. To see that a nurse knows how to mobilize and utilize voluntary assistance, that great storehouse of energy and means of wider activity and publicity for her and her work, if rightly used and directed.

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* Read before the Public Health Nursing Section of the American Public Health Association at the Fifty-seventh Annual Meeting at Chicago, Ill., October 15, 1928.

7. To see that the nurse understands how to coöperate with other agencies in the community or state which can assist her in furthering her work.

Pearl McIver, director of the Missouri State Department of Public Health Nursing, while at Teachers' College, Columbia University, New York, N. Y., last year, made a study of staff education for rural public health nurses in twelve selected states. She gives six methods of attacking the staff education problems which were used by the directors in these twelve states. These methods can well apply to all types of public health nursing services; so they are enumerated here with an explanation of the way in which each one is used to solve our staff education problems in Indiana.

PERSONAL CONTACTS AT THE STATE OFFICE AND IN THE FIELD

We always encourage new nurses to visit the state office either before taking positions or shortly after, and we explain the resources of the state in health work. They are given an opportunity to talk with the heads of departments of the State Board of Health and our health commissioner himself.

The new nurse visits the university hospitals, with which she has many contacts in the course of her work. She meets the executive secretary of the state tuberculosis association or the Red Cross nursing field representative. We aim to leave nothing undone which will make the nurse appreciate the interest we and the other state agencies feel in her and her work.

Regarding personal contacts in the field, our hope has been to visit each public health nursing service at least twice a year, but with so many services and some of them needing more assistance than others, it has never been possible to get around to them all even once in any year. We try to visit the new nurses early, spending from three days to a week with them.

Since Indiana has so many joint public health nursing services and the American Red Cross has a nursing field representative in the state who sends us reports of her visits to every service and confers with us about them, we agree to have her make the field visits on all services in which the Red Cross participates, leaving us freer to spend more time in the other services.

Tuberculosis association funds are used in more of the county services even than Red Cross funds, and since the state tuberculosis association employs no advisory nurse, our department serves them in that capacity. We consult with the state tuberculosis association executive when we visit any service where tuberculosis association funds are used, and report any developments of interest to his department. Since our department is the connecting link in state

supervision of public health nursing between the Red Cross and the state tuberculosis association, we also report to him anything of interest concerning a tuberculosis service given on the report of the Red Cross nursing field representative, and report to the Red Cross Headquarters in Washington on any service to which the Red Cross is contributing, sending a copy of our letter to the state Red Cross nursing field representative.

Concerning contacts in the field, we sometimes find that spending an evening with a nurse does much more toward creating confidence and good feeling than does contact during hours on duty.

CONTACT BY CORRESPONDENCE AND BULLETINS

The second method of attacking the problems of staff education is by contact with the nurses in the field through correspondence and bulletins.

We believe thoroughly in publicity in public health nursing through our special bulletin, *Echoes,* and through the State Board of Health *Bulletin* to which we contribute. In our State Board of Health *Bulletin* we announce new placements made by our department with a description of the nurses' training and experience, and also mention the nurses who are taking special courses in public health nursing. We believe that these bulletins are giving all the public health nurses in the state a greater group feeling.

REGIONAL CONFERENCES

We have only made a small start, but the experiments so far lead us to believe that the regional conferences can be the very best means of teaching the nurses better ways of doing things, because requests for these meetings come from the nurses themselves.

We have divided the state into five public health nursing districts, the size determined not only by the number of public health nurses in them but by the types of services which they contain. We believe the city staff nurses and the county and town nurses need to get together.

There will probably be a fundamental program arranged for each district, based on the general need of all the nurses and including demonstrations of nursing procedures, but there will be a certain latitude for choice of topics by the nurses themselves which they indicate in the questionnaires sent to them.

ENCOURAGING ATTENDANCE AT STATE AND NATIONAL MEETINGS

We attend the annual meeting of the state tuberculosis association and the Indiana State Conference on Social Work and urge the nurses to attend them, not only for the parts of the program which touch

directly upon nursing, but for the larger vision obtainable of organization possibilities and individual and family case work.

At the annual meeting of our State Nurses' Association a day is given over to a public health nursing program. Our department is always consulted about the program and we coöperate by obtaining speakers and planning special round tables and exhibits for the nurses.

Each year more nurses attend the annual conference of our state health officers. We suggest to our State Health Commissioner for inclusion in the program the names of one or two nurses who are doing outstanding work. The health officers need this contact with the nurses and the nurses need the health officers' point of view.

A loan library which contains the standard and latest health publications is another factor that can be used in promoting staff education in a state. A small one has been started in our state library, and the nurses can either obtain the books from the state directly or through their local libraries.

POSTGRADUATE STUDY FOR NURSES

This can be done in five different ways:

1. By providing scholarships. Since the Indiana State Board of Health does not contribute to the salary of any public health nurse, as some state departments do, we have no funds for scholarships. We always explain to would-be public health nurses the American Red Cross public health nursing scholarships.

2. By maintaining a rural teaching center. This method has never been attempted in Indiana because the state is so situated that the nurses desiring to do county work can easily take public health nursing courses at nearby colleges or get experience on public health nursing staffs in Indiana cities.

3. By offering extension courses. Our department could do a great deal toward presenting the opportunity for extension work to the nurses, and we mean to be more active in this than we have been.

4. By arranging short intensive courses in various specialties. The National Tuberculosis Association and the American Red Cross have held institutes in the state, and we have attended and encouraged the nurses to attend.

5. By arranging for leaves of absence. Many times our department has been instrumental in having a health officer, a superintendent of schools, or a health committee see the advantage of allowing a nurse a leave of absence to visit some good public health nursing service for a week or more for observation; or taking a summer course, or even a year's course, in public health nursing.

The first requisite for developing an effective staff education program is coöperation with other state and national health agencies. We state directors are always preaching coöperation to the nurses out in the field, and I wonder whether we ourselves are coöperating to the fullest extent with other health agencies. A director should not think she is the only authority on public health nursing in her state. Many of our state public health nursing departments would not be in

existence if they had not originally been fostered and financed by two of the unofficial health agencies, the American Red Cross and the state tuberculosis associations. These two organizations, because they are national in scope, are kept from becoming too provincial. They are both doing valuable health work in Indiana and without them and the stimulus they give to lay groups and to us, public health nursing in many communities would be far behind or not even started.

Since so many public health nursing services are financed by combinations of the Red Cross, the county tuberculosis association, the health departments, and school boards, there would be a tremendous amount of confusion among nurses if our department and the state executives for both the American Red Cross and the tuberculosis association did not agree on every point.

I think placement is the most difficult of a state director's work. We never recommend a nurse to a service to which tuberculosis funds contribute unless her credentials have been discussed with the executive secretary of our state tuberculosis association, and no nurse is recommended for a service to which the Red Cross contributes unless her credentials have been submitted to the assistant director of public health nursing for the American Red Cross in Washington. Each organization extends the same courtesy to our department whether or not official funds are being used to finance the service.

The State Nurses' Association can be a bulwark of comfort and assistance to a director who is professional and tries to have the public health nurses live up to the standards set by the state and national nursing associations.

We make every effort to coöperate with the state medical association as an organization and with individual physicians. The publicity bureau of our state medical association sends us 100 copies of its weekly news bulletin release which we send out with our correspondence. Many of the nurses use this material for publicity in their local papers. One of our hobbies is urging better standards of ethics with the medical profession to the nurses at all times.

Effort is made also to have every public health nurse join the National Organization for Public Health Nursing, and subscribe to the *Public Health Nurse.*

Public health and public health nursing are new; state divisions of public health nursing are newest of all, and much still has to be done before their work fully meets all needs. I cannot think of any greater opportunity to serve or of any work which demands greater energy and ingenuity than that which falls to the lot of state directors of public health nursing.

DISCUSSION

PEARL McIVER

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IN the study which I made of rural staff education last winter, I found that the number of rural nurses per supervisor varied all the way from 10 to 145 in some states. The average is about 30, and when one considers the time involved in getting from one nurse to another, the difficulties of a state supervising nurse are quite evident. The average number of visits to each nurse is twice a year, and the duration of the visit is about two days.

One of the most valuable phases of our staff education work in Missouri has been our combined conferences of health officers and public health nurses. Seven years ago the nurses met for an annual conference and the health officers held their conference at a different place and time. Two years later we sent questionnaires to all health workers suggesting a combined conference, and by far the majority voted for the combined meeting with joint sessions in the morning and sectional meetings in the afternoon. Last year, many health officers asked that all of the sessions be joint sessions because the nurses had many speakers whom the health officers wanted to hear, and the nurses felt the same way about the health officers' section. Thus next year we will perhaps have very few sectional meetings and more joint sessions.

From these conferences we have developed an affiliated society of the American Public Health Association, and the attendance of rural health workers at the annual meeting is almost 100 per cent.

For several years we have been conducting regional conferences for the nurses, and the non-official health agencies, such as the state tuberculosis association and the Red Cross, have been a big help to me in making these meetings successful. The nurses are asked to suggest topics for discussion, and a tentative program is sent to each nurse for her approval, some time before the conference meets. Since the Missouri Public Health Association meeting is held in the spring and the State Nurses Association in the fall, we plan but two regional conferences in each district during the year, one in the summer and one in the winter. The health officers have not had regional conferences until this year. The health officers suggested that the nurses be invited to have their regional conferences at the same place and time as they. Hereafter we shall plan our meetings together.

Like most states, we have found it difficult to supply the demand for well qualified nurses. We have tried to adhere to the State Board of Health regulations, which require a minimum of 4 months' postgraduate work in public health nursing, or in lieu of the postgraduate training, 8 months public health experience under adequate nurse supervision. In a few instances, we have been forced to accept nurses who do not fully meet these requirements.

For this reason we felt the need for a teaching center where prospective public health nurses can be given a rather thorough introduction to the rural field. We have just established such a center in connection with the Boone County Health Department, and we hope that it may solve some of our problems.

Boone County is a rather typical county with a population of 30,000, 11,000

of whom live in Columbia, the county seat. The rural section is divided into two districts, and there is a nurse in each district. There is an additional nurse in Columbia, with a whole-time medical director, a supervising nurse and an office clerk. The funds for the support of this unit come from the county court, the city schools, Red Cross, tuberculosis association, local welfare society, the State Board of Health, the U. S. Children's Bureau, and the International Health Board; so it is truly a coöperative undertaking.

It is our plan to send every nurse who has not had field experience in rural work to the teaching center for a period of observation and practice. The length of this training period will depend upon the previous experience and training of the nurse; but as a general rule we are planning to keep each nurse at the teaching center for 2 months. Those who have had previous public health experience on a city staff, or an approved theoretical course will be placed in counties by themselves, and those who have not had the required 8 months' experience under supervision will be placed in counties where we have a supervising nurse.

At the present time we have two trainees, and we have planned a series of lectures to be given by representatives of the official and non-official agencies in the state, so that the students will know what agencies exist and what may be expected of each. These lectures will be attended by the entire staff of the unit, and also by the nurses employed in the local county hospital.

Following the 2 months at the training center the nurses will spend a few days at the State Health Department executive offices, familiarizing themselves with the various services and visiting the other departments dealing with education and welfare work. They will also have an opportunity to visit the U. S. Public Health Service Trachoma Hospital at Rolla, Mo., the Deaf School, one of the insane hospitals, and the School for Feebleminded. Eventually, we hope that either Washington University, in St. Louis, or the State University, in Boone County, will include an approved public health course in its curriculum; then we hope to get our students through the university, and our training center will be used as a practice field for rural nursing by the university.

German Health Centers and Health Museums

HEALTH centers, where advice and information are given free to people of all ages, have been established by local authorities and private agencies in practically all the cities of Germany. In Berlin and several other cities, health museums have also been established, containing collections of exhibits intended to teach the principles of hygienic living. The best known of these is the Museum of Hygiene, in Dresden. This museum maintains traveling health exhibits, which have been shown in about 400 cities in Germany and in several other countries. The work of the museum has gained the recognition of the federal and state authorities, and these are now providing financial aid for its activities; previously it was supported mainly by private funds.—*Vorwärts,* Berlin, July 29, 1928.

EDITORIAL SECTION

Expressions of opinion and statements of supposed facts are published on authority of the writer under whose name they appear, and are not to be regarded as expressing the views of the American Public Health Association, unless such statements or opinions have been adopted by vote of the Association.

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MEASLES

THE etiology of measles and its control still remain among the major problems, the first being for the laboratory to clear up, the second for the health officer. The disease is almost universal in its prevalence, and few individuals escape it. It is one of the greatest perils of early childhood, death occurring especially between the ages of 6 and 36 months. The general cause of death is some type of pneumonia, the exact cause of which is not certainly known. While it is generally believed that the pneumonia is induced by a secondary infection, it has been suggested that the microörganism of measles itself is responsible. There are a number of reasons which strongly suggest the latter.

There are conflicting claims as to the germ responsible for the causation of measles, and the most that can be said at present is that the question is undecided. Animal sera have been produced by immunization against several of the germs isolated by different workers. In this country quite glowing reports have been given by certain observers of the protection afforded by the serum of goats immunized against Tunnicliff's organism. Hoyne and Gasul[1] reported 88 per cent protection of 44 exposed non-immunes, the remaining 12 per cent having had only a mild attack. Halpern[2] claims to have produced protection in 63 per cent of 45 patients exposed. Of the remainder, 17 developed the disease in a mild form, which the author speaks of as an "attenuated form," for just what reason it is not clear, since so many children have a mild type of the disease under any circumstances.

A recent critical study of four immune sera has been made in England:[3] (1) Tunnicliff's horse serum, (2) Ferry and Fisher's horse serum, (3) Degkwitz's sheep serum, and (4) Serum from convalescent

cases of measles. While the animal sera, with the exception of Ferry and Fisher's, gave some protection, all were found deficient, and all gave a certain number of serum reactions, running as high as 33.3 per cent for one. On the other hand, human convalescent serum gave no reactions, and apparently protected in 95.7 per cent of the cases in which it was used. Approximately 22 per cent of the control cases escaped infection, showing that the negative history was either inaccurate or that the patients were naturally immune, so this finding must be taken into consideration in judging of the protection apparently afforded by the sera.

Our conclusions, derived from a rather extensive review of the literature, accord with those reached by Gunn as the result of the experiments just recorded,—namely that all animal sera so far produced are uncertain and deficient in protective power, and that human convalescent serum is the only reasonably sure prophylactic known. Its use has been shown to be safe, free from unpleasant reactions, and dependable. The great drawback to its extensive employment lies in the difficulty of obtaining it in sufficient quantities. We must still hope for the production of an animal serum which will be free from this drawback.

REFERENCES

1. *J. A. M. A.*, Oct. 9, 1926, p. 1185.
2. *J. A. M. A.*, Apr. 7, 1928, p. 1109.
3. *Lancet* (London), Oct. 6, 1928, p. 690.

BREAD AND YEAST

THE amazing success of the campaign by certain manufacturers to encourage the eating of yeast gives interest to any information concerning this remarkable plant. Additional interest comes from the tendency evident in many parts of the world to "purify" wheat flour. This purification consists in the complete removal of the hull and the germ, those parts of the grain which carry the vitamins, protein and mineral salts. In general, the same statement may be made concerning another staple food, rice, the study of which began, and has added greatly to, our knowledge of vitamins.

In this country, eating of yeast holds the public attention to a remarkable degree, but there is little discussion over the excessive milling and refinement of flours, except among specialists. In England the question of white bread as against wholemeal bread has been more or less active for a number of years, and is especially so at present, owing to the formation of a society, some of the members of which regard the use of white bread as a crime, and the wide publication of articles by certain prominent men.

In that country, wholemeal bread is somewhat more expensive than white bread, and since bread makes up about two-fifths of the foodstuff of the population, many of whom are extremely poor, the importance of the matter from a national standpoint is evident.

Some have taken comfort in the supposed protection afforded by the use of yeast to raise bread. It has, however, been shown that the amount of yeast added, as well as that present at the time of baking, averages slightly above 1 per cent, which is not enough to make up for the loss due to high milling; indeed, it is only about one-tenth of what is required to give a sufficiency of vitamin B. It has been definitely shown that vitamin B contains at least two factors, both of which are necessary for health and growth, and recent experiments[1] have shown that the addition of 2 to 4 per cent of dried yeast will produce a bread equal nutritively to the best wholemeal product. Such a bread is palatable and cheap. Vienna bread, which is imitated in many parts of the world, and is noted for its palatability, contains an unusually large amount of yeast. The addition of yeast requires no new machinery such as would be required for a decided change in the milling processes. It seems probable that brewer's yeast is better fitted for this purpose than other yeasts; and it must be dried at a sufficiently high temperature to destroy the diastatic enzymes, in order to avoid undue fermentation which an excess of yeast might bring about. Any yeast which is to be utilized should be examined, and tested for its vitamin B content. As far as experiments show, its use, even in large quantities, is free from danger, and the proteins which it contains are utilizable in from 30 to 50 per cent of the total diet.

The entire question is one of increasing importance, owing to the growing practice of bleaching flours which are highly milled to begin with, the substances used in bleaching tending to destroy what vitamins may be left.

REFERENCE

1. *Lancet*, London, Sept. 29, 1928, p. 668.

THE PATIENT AMERICAN!

A NEW view on the American comes from an English medical journal[1] in a review of the brochure on scarlet fever issued by the U. S. Public Health Service. The criticism is made that it is much too long (5,000 words), at least for British consumption. The British are said to become bored after reading two thousand words, and anything beyond this usually leads to impatience and exhaustion, so that the article is likely to be cast aside. The opinion is ventured that the

Americans, contrary to what is usually believed of them, read and listen better and for longer periods than the English.

We wonder how much truth there is in this conjecture. We believe that it is fallacious. Among the outstanding characteristics of Americans is an enormous energy in doing things—which may extend to learning how to do them—but an impatience with presentations which are too long and deal too much with details, unless these details are necessary for the accomplishment of work.

Very recently, we have read a criticism of a book[2] in which its length and size, and the consequent fatigue of holding it during perusal, are emphasized. We note in a number of reviews that the weight of paper upon which a book is printed is mentioned, and the light-weight paper of the English publishers commended. Our observations also lead us to believe that the average American reader does what women are accused of doing with novels—reading the last page first. For scientific articles this means reading the conclusions. If the reader is particularly interested in the subject and needs further information, the article may be studied. Further, practically all medical and public health journals have cut down on bibliography and history. There are several reasons for this, such as the expense of printing, and a pretense of study often not justified; but we believe that the great reason lies in the desire of readers for a concise presentation of facts.

There is no question that an enormous amount of work is being done in this country, and just as little question that the individual workers will dig into literature with almost inexhaustible patience when necessary. On the other hand, we are compelled to believe that the average American is not so familiar with literature, so widely read, nor so patient in acquiring knowledge as the average Englishman or European. Vaughan,[3] in advocating the historical method of teaching, points out that when meningitis appeared in America, we lost many precious months in learning facts which had been "demonstrated conclusively by French army surgeons in the first half of the 19th century."

While we appreciate the compliment to our American people, we fear that we cannot accept it without reservation.

REFERENCES

1. *Med. Off.*, July 21, 1928.
2. *South. M. J.*, June, 1928.
3. *Epidemiology and Public Health*, Vol. I, p. 9.

ASSOCIATION NEWS

COMMITTEE ON COÖPERATION, DEVELOPMENT AND FINANCE

At the Governing Council meetings in Chicago a new Committee on Cooperation and Development was authorized, this committee being charged with the study of fundamental Association problems, including those relating to affiliated societies, and to work out suitable coöperating relationships with other national and local agencies that are active in the field.

A motion of the Finance Committee which was approved by the Council, recommended the enlargement of the Finance Committee with a view to studying the financial structure of the Association and developing a financial policy adequate to carry out the Association's growing program.

An amendment to the By-laws provides that the chairman of the committee shall be a member of the Executive Board.

These two committees have been joined in the new Committee on Cooperation, Development and Finance, which held its first meeting in the offices of the Association on November 10. The committee first addressed itself to the task of formulating a simple statement of the principal aims and objectives of the Association. It has requested several sub-committees and standing committees of the Association to elaborate on several parts of this statement.

The present personnel of the committee is: Louis I. Harris, M.D., Chairman, W. S. Rankin, M.D., C. F. Wilinski, M.D., Sally Lucas Jean, Abel Wolman and Arthur Gorman, together with the President, Treasurer and Secretary who are members ex officio.

The next meeting of the committee will be held on December 7, following which they will have a joint dinner with the Executive Board which meets on December 8.

MINNEAPOLIS LOCAL COMMITTEE

The President has appointed William F. Kunze as Chairman of the Local Committee for the 58th Annual Meeting to be held in Minneapolis, Minn., during the week of September 30, 1928. Mr. Kunze is director of the Minneapolis Department of Public Welfare and is President of the Hennepin County Public Health Association.

OHIO SANITARIANS MEET

There were 305 registered and affiliated members attending the Ninth Annual Meeting of the Conference of Ohio State Health Officers and the Ohio Society of Sanitarians held November 7–10 at Columbus, O., and of this number 200 were health officers and public health nurses.

The following officers were elected: President, C. D. Barrett, M.D., Lorraine County; First Vice-president, Edgar R. Hiatt, M.D., Health Commissioner of Miami County; Second Vice-president, Marion Howell, R.N., Western Reserve University; Secretary-treasurer, E. R. Schaffer, M.D., Ohio State Department of Health; James A. Beer, M.D., F. Holman Waring, and Mrs. Zoe McCaleb, members Executive Committee.

Harry L. Rockwood, M.D., Health Officer of Cleveland, was elected as representative on the Governing Council of the A. P. H. A.

W. F. Walker, D.P.H., field director for the Committee on Administrative Practice, represented the American Public Health Association.

This meeting was considered the best that the Ohio health officers have had and among the outstanding contributions were the papers read by Frank G. Boudreau, M.D., representing the Health Division of the League of Nations, Geneva, Switzerland, who was also elected an honorary member of the Ohio society; Walter Simpson, M.D., of Miami Valley Hospital, Dayton, O., on "Tularemia"; and Edward Francis, M.D., on "Tularemia and Undulant Fever"; and by Dr. Rockwood on "Control of Tuberculosis."

While in Ohio, Dr. Walker took the opportunity to discuss with Dr. Monger, Ohio State Health Officer, the survey of health activities of the Ohio State Department of Health, recently made by James Wallace, M.D., associate to Dr. Walker.

DEATH OF MRS. SEDGWICK

Mrs. Mary Sedgwick, the widow of the late Dr. William T. Sedgwick, a former President of the Association, died Tuesday morning, November 6, in New York, N. Y. Mrs. Sedgwick had been confined to her bed for over a year, due to an injury received in a fall. Funeral services which were held at the St. Luke's Hospital Chapel, New York, N. Y., were attended by several of Professor Sedgwick's former students at Massachusetts Institute of Technology and representatives of the Association.

NEW OFFICERS FOR DELTA OMEGA

Lieutenant Colonel Edward G. Huber, of the U. S. Army Medical Corps, was elected president of the honorary public health society, Delta Omega, at its fifth annual meeting, held at Chicago, October 15, 1928, during the convention of the American Public Health Association. C. C. Young, D.P.H., Michigan State Department of Health, was elected vice-president, and James A. Tobey, LL.B., Dr.P.H., New York, was re-elected secretary-treasurer. The Delta Omega Society now has about 200 members belonging to six chapters located at the Johns Hopkins School of Hygiene and Public Health, the Harvard University School of Public Health, the Massachusetts Institute of Technology, the University of Michigan, the Yale School of Medicine, and the University of California.

MR. FULLER CALLS ON DR. HARRIS

Before leaving Chicago, where he was elected President of the American Public Health Association, George W. Fuller called on Malcolm L. Harris, M.D., the president-elect of the American Medical Association. Mr. Fuller paid his official respects to Dr. Harris and assured him of his desire to coöperate with him to bring about a better understanding between public health workers and the medical profession.

DEATH OF FRED BERRY

Fred Berry, 44 years of age, Chief of the Division of Laboratories, Ohio State Department of Health, Fellow of the American Public Health Association, and a frequent contributor to the AMERICAN JOURNAL OF PUBLIC HEALTH AND THE NATION'S HEALTH, died at his home in Columbus, October 20, after several months' illness from Bright's disease.

Mr. Berry was graduated from the Ohio State University in 1906 and immediately became affiliated with the Department of Laboratories of the Ohio State Department of Health. He held a Master's Degree from the Ohio State University and at the time of his death he was completing his thesis for his Ph.D. degree from the University of Chicago.

In 1918 he resigned from the department, to join Dr. J. McI. Phillips in the operation of the Columbus Pasteur Institute, and a year later he returned to the State Department of Health to become chief of the division of laboratories.

NEW MEMBERS

Fred L. Adair, M.D., Minneapolis, Minn. (Assoc.)

Magnus W. Alexander, New York, N. Y. (Assoc.)

Henry A. Allen, Chicago, Ill., Mechanical Engineer in charge of Department Public Works, Bureau of Engineering

John S. Bengston, Ph.G., D.V.M., Washington, D. C., Bacteriologist and Pathologist, Bureau of Animal Industry, U. S. Department of Agriculture

Clifford E. Blackburn, Toronto, Ont., Member Toronto Health Board

Ruth Alice Boak, M.S., Albany, N. Y., Assistant in Research, Department of Pathology, Albany Medical School

Emily F. Bolcom, M.D., Boise, Ida., Director Bureau of Child Hygiene, Department of Public Welfare

Faye C. Bowen, Jackson, Mich., County Nurse

Herbert E. Bowman, Ph.G., Somerville, Mass., Milk Inspector and Milk Bacteriologist

J. L. Bowman, M.D., Montgomery, Ala., County Health Officer

Alfred David Browne, M.D., Nashville, Tenn., Professor of Health Education, Peabody College

Francis H. Bulot, Chicago, Ill., Consulting Sanitary Engineer

Clare W. Butler, Albany, N. Y., Temporary Research Statistician, State Department of Health

John Deere Cady, Chicago, Ill. (Assoc.)

Douglas Launeese Cannon, M.D., C.P.H., Montgomery, Ala., Acting State Health Officer

Lillian S. Carlson, Chicago, Ill., Tuberculosis Field Nurse, Washington Blvd. Dispensary

Philip R. Carter, Minneapolis, Minn., Milk Sanitation, Division of Sanitation, State Department of Health

Frances Cohen, A.B., M.D., New York, N. Y., Assistant Director of Educational Hygiene, Department of Education, Department of Health

Jacob George Cohen, B.A., Minneapolis, Minn., Secretary American Mouth Health Association

Marion B. Coleman, B.S., Albany, N. Y., Assistant Bacteriologist, Division of Laboratory and Research, State Department of Health

William Rogers Copeland, B.A., Hartford, Conn., Sanitary Engineer, State Water Commission

Elsie Cressman, Los Angeles, Calif., Public Health Nurse, Los Angeles Maternity Service Association

G. Gale Dixon, Sc.B., Youngstown, O., Civil and Sanitary Engineer

Anna M. Doyle, R.N., Hamilton, O., Superintendent of Nurses, Public Health League

Anna McMillan Drake, R.N., Cincinnati, O., Assistant Secretary, Public Health Federation

George A. Dundon, Milwaukee, Wis., Director of Health Education, Department of Health

Eunice H. Dyke, R.N., Toronto, Ont., Director Division of Public Health Nursing, Department of Health

Avis Emily Edgerton, Lock Haven, Pa., Teacher in Health Education

Jean C. Fisher, R.N., Ambridge, Pa., School Nurse

Mary H. Flynn, R.N., Franklin Park, Ill., Public Health Nurse, Cook County Department of Health

Edward G. Folsom, Mt. Clemons, Mich., Health Officer

Annette M. Fox, Lansing, Mich., District Nurse, State Department of Health

Dr. A. A. Freedman, Chicago, Ill., Tuberculosis Worker, Racine Avenue Dispensary

Mona E. Gaskin, R.N., Lansing, Mich., Nurse State Department of Health

Carl C. Gibbs, Lake Forest, Ill., Sanitary Engineer

H. S. Gove, M.D., Linn, Mo., Health Officer, Osage County

Edmund Alexander Grant, D.D.S., Toronto, Ont., Director of Dental Services, Department of Health, and Secretary Canadian Dental Hygiene Council

W. W. Gray, M.D., St. Joseph, Mo., Health Officer

Thomas Coleman Green, M.A., Austin, Tex., Superintendent and Chemist in Charge, Filtration Plant

Willard Parker Greene, M.D., Minneapolis, Minn., Epidemiologist Division of Preventable Diseases, State Department of Health

Willard N. Greer, Ph.D., Philadelphia, Pa. (Assoc.)

John Gerard Hardenbergh, V.M.D., Plainsboro, N. J., Sanitary Supervisor and Laboratory Worker, The Walker-Gordon Laboratory Company (Assoc.)

Harry Gordon Harding, Ph.D., Akron, O., Dairy Technologist, Akron Pure Milk Company

James E. Harper, M.S., Boston, Mass., Milk and Dairy Inspector, Massachusetts Guernsey Breeders Association

E. J. Henryson, Minneapolis, Minn., Publisher of Health Education Literature, Charts, Posters, etc.

Joseph Howard Hickson, M.D., New Haven, Conn., Sanitary Inspector, Yale University

E. J. Higgins, M.D., Joliet, Ill., Commissioner of Health

S. Rowland Hill, M.D., Lansing, Mich., Health Officer

Margaret M. Hughes, Chicago, Ill., Tuberculosis Worker, South Side Dispensary

Eden B. Hunt, Philadelphia, Pa. (Assoc.)

George William Hunter, Ph.D., Claremont, Calif., Director of Health for Colleges, and Professor of Biology, Pomona College

George Kernohan, D.V.M., M.S., Petaluma, Calif., Director Avian Pathology Laboratory, University of California

Irl Brown Krause, M.D., Jefferson City, Mo., Assistant Health Commissioner and Director Division of Child Hygiene, State Department of Health

Henry C. Lapp, North Tonawanda, N. Y., Health Officer

Nathan E. Lazarus, Buffalo, N. Y., Consulting Sanitarian, Dairy Industry

E. G. Le May, Ph.G., Austin, Tex., Director Bureau of Food and Drugs, State Department of Health

George C. D. Lenth, Chicago, Ill., Consulting Engineer

Estelle D. Leonard, Chicago, Ill., Tuberculosis Worker, State Street Dispensary

Hattie Frances Long, R.N., Parkersburg, W. Va., School Nurse

Charlotte Ludington, R.N., Detroit, Mich., Field Nurse, State Department of Health

Daniel P. MacMillan, Ph.D., M.D., Chicago, Ill., Director Bureau of Child Study and Physical Examination of Teachers

Helen M. Maher, R.N., New York, N. Y., Superintendent of Nurses, Department of Health

Olive B. Marty, R.N., Cairo, Ill., Rural School Nurse

Donald H. Maxwell, S.B., Wilmette, Ill., Hydraulic and Sanitary Engineer

Nelle McClintock, R.N., Ottawa, Ill., Public Health Nurse

Ida McNeff, Chicago, Ill., Tuberculosis Worker, Sedgwick Street Dispensary

Kent Churchill Melhorn, M.D., Commander (M. C.) U. S. Navy, Port au Prince, Haiti, Director General Public Health Service (Assoc.)

Richard Messer, Richmond, Va., Chief Engineer, State Department of Health

Walter H. Miles, M.D., B.S., Oklahoma City, Okla., Director of Health Department

Bernice Amanda Miller, Chicago, Ill., Metropolitan Director of Health Education, Y. W. C. A.

Agnes Fay Morgan, Ph.D., Berkeley, Calif., Professor of Household Science, University of California

Howard E. Moses, B.A., Harrisburg, Pa., Assistant Chief Engineer, State Department of Health

Mabel Gray Munro, South Bend, Ind., Superintendent Visiting Nurse Association

Mary E. Murphy, Ph.B., Chicago, Ill., Director Elizabeth McCormick Memorial Fund

Esther Nash, R.N., Lansing, Mich., Public Health Nurse, State Department of Health

Charles G. Phillips, Montclair, N. J., Head of Board of Health as Mayor

A. S. Pinto, M.D., Omaha, Neb., Health Commissioner

B. F. Pirc, M.D., Belgrade, Yugoslavia, Chief Statistician, Central Hygiene Institute (Assoc.)

Rutherford J. Posson, B.S., Washington, D. C., Manager Washington Dairy Council

Myrtle Preddis, R.N., Berwyn, Ill., Public Health Nurse, Cook County Health Department

J. M. Quigley, M.D., Clearfield, Pa., President Board of Health

Clareiss Thomasine Rayne, Lawrence, Mass., Student in Public Health, Massachusetts Institute of Technology (Assoc.)

Harry Kirke Read, M.D., Houston, Tex., Supervisor of Hygiene, Public Schools

John Joseph Regan, D.V.M., New York, N. Y., Chief Veterinarian and Director of Laboratories, Dairymen's League

Frank E. Rice, Chicago, Ill., Executive Secretary, Evaporated Milk Association

Frank C. Roe, Jr., B.S., Chicago, Ill., Sanitary Engineer

Bertha Rose, M.D., Michigan City, Ind., School Physician

Mabel J. Rue, B.S., St. Louis, Mo., Educational Director, Visiting Nurse Association

Fred A. Safay, Jacksonville, Fla., District Sanitary Officer, Bureau of Engineering, State Department of Health

M. Scherago, Lexington, Ky., Head of Department of Bacteriology, University of Kentucky

Dora Sharp, Macomb, Ill., Director of Physical Education, Western Illinois State Teachers College

Ellen Sizelove, Chicago, Ill., Tuberculosis Worker, South Side Dispensary

Channing G. Smith, M.D., Granger, Ia., Chairman Committee Council of Iowa State Medical Society

Grace M. Sonnenschein, Chicago, Ill., Tuberculosis Field Nurse, Stock Yards Dispensary

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Carroll P. Streeter, St. Paul, Minn., Health Editor, *The Farmer's Wife*

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Elizabeth C. Tandy, D.S., Washington, D. C., Director Statistical Division, U. S. Department of Labor, Children's Bureau

Harold A. Tarbell, M.D., Newark, N. J., Bacteriologist, Department of Health

Ralph Edwin Tarbett, S.B., Washington, D. C., Chief Sanitary Engineering Section, Domestic Quarantine Division, U. S. Public Health Service

Matilda Margaret Thuman, Cambridge, Neb., School Nurse

William M. Wallace, Detroit, Mich., Superintendent of Filtration, Water Works

George N. West, D.D.S., Chicago, Ill., Member of Public Service Committee, Chicago Dental Society

Onalee E. Whipple, Pontiac, Mich., with Bureau of Records and Health Education

William G. Willard, M.D., Benzonia, Mich., Health Officer

Eva M. Wilson, M.D., Manhattan, Ill., Lecturer, State Farmers' Institute

Katherine M. Wilson, Godfrey, Ill., Nurse in Girls' School

Carl Albert Wilzbach, M.D., Cincinnati, O., with Public Health Federation of Cincinnati and Cincinnati Social Hygiene Society

Frederick K. Wing, C.E., Buffalo, N. Y., Sanitary Engineer

Jacob M. Wisan, D.D.S., Elizabeth, N. J., Chairman Oral Hygiene Committee of Union County Dental Society and Member State Committee Oral Hygiene

Rachelle S. Yarros, M.D., Chicago, Ill., Director Social Hygiene Council

LETTER TO THE EDITOR

TO THE EDITOR:

There seems to exist a considerable misunderstanding as to the auspices under which the various health demonstrations in the United States have been conducted. This misunderstanding appears to prevail not only among the general public, but to some extent among the medical profession and through the public health field. Statements have recently been published to the effect that the health demonstration in Mansfield, O., completed two or three years ago, was financed and directed by the Commonwealth Fund. At the recent meeting of the American Public Health Association in Chicago, the inaccurate statement was made by one of the speakers that the demonstrations of the Commonwealth Fund are operated by the American Child Health Association. It therefore seems worth while in the interest of clarity to make the following statement:

The Child Health Demonstration Committee of the Commonwealth Fund has financed and conducted a health demonstration in Fargo, N. D. This demonstration was completed December 31, 1927. The same committee of the Fund has also conducted demonstrations in Clarke County, Ga.; in Rutherford County, Tenn.; and in Marion County, Ore. The first two of these will be completed December 31, 1928. The Marion County Demonstration will continue until the conclusion of the 5-year period as agreed upon. The Commonwealth Fund is responsible, and exclusively responsible, for the policies adopted in the operation of the above named demonstrations. It is not responsible for any other health demonstration whatsoever, and has never had any connection, financial or other, with any other health demonstration.

I shall appreciate it if you will publish this statement in your valuable journal.

Barry C. Smith,
Director

The Commonwealth Fund,
New York, N. Y.,
October 20, 1928

PUBLIC HEALTH ADMINISTRATION

HENRY F. VAUGHAN, D. P. H.

Wholesale Life Saving—The practicing physician is compared to the retailer and the public health officer to the wholesaler in the promotion of the public health. The physician considers the individual as a unit while the public health worker must think in terms of the community as a whole. The physician writes the individual prescription for the patient while the health officer must lay out a broad and far-reaching program. The physician has been trained in the school of defense, to attack disease as it appears. The health officer has been trained in the school of attack, the application of preventive measures.

Public health work has increased rather than decreased the practice of competent physicians; to function properly health organizations must have the coöperation of organized medicine; aside from the control of communicable disease, the care of the indigent sick is not a public health problem; special training is essential for the public health worker; preventive medicine should be emphasized in teaching in medical schools; every physician's office should be a health center; health departments and unofficial health organizations should not practice curative medicine.—Homer N. Calver, Retail or Wholesale Life Saving: Which Pays the Better?, *J. A. M. A.*, 91: 1285 (Oct. 27), 1928.

Measles Antitoxin—During an outbreak of measles in Detroit, Mich., antitoxin prepared from a green-producing streptococcus isolated by Ferry & Fisher was used to protect contacts against measles in certain institutions. At the Children's Hospital, where the treated patients were controlled with an equal number of untreated patients under the same conditions, the computed actual protection, following the use of 20 c.c. measles streptococcus antitoxin, was 88 per cent. At the Herman Kiefer Hospital 10 c.c. of antitoxin was used and controlled with a much larger number of untreated cases and also controlled with a group which received 5 c.c. measles convalescent serum. The computed protection with antitoxin was 42 per cent compared with 19 per cent for those treated with measles convalescent serum.—N. S. Ferry, *et al.*, Clinical Results with Measles Streptococcus Toxin and Antitoxin, *J. A. M. A.*, 91: 1277 (Oct. 27), 1928.

Small Town Survey—A sanitary and health survey was made of 18 incorporated towns and 1 small city all located in Darke County, O. Each house in the county was visited and inspected between June, 1927, and February, 1928. Residents were interviewed with regard to family history and tabulations were made of sanitary conditions found. The federal census for 1920 gave 16,167 as the population. The population actually found or estimated by the surveys was 14,111, showing a loss of 12.7 per cent. In this population there resided 931 individuals who gave a history of having suffered from typhoid fever at some period of their lives. This represents 7.9 per cent of the population. Four hundred and fifty-three individuals have had smallpox. It was found that 60 per cent were unprotected by previous attack of

the disease or by recent or remote vaccination. Approximately 80 per cent of the children of school age were unprotected.

Among the outstanding health problems demanding the attention of the various authorities are the safeguarding of the milk supply, the elimination of typhoid carriers from food handling establishments, adequate protection of the water supply, safe disposal of sewage, immunization against smallpox and diphtheria, location and care of tuberculosis cases and health education.—M. E. Barnes, The Health Problems of the Small Town as Determined by the Survey Method, *Ohio State M. J.*, Sept., 1928.

Diphtheria Prevention Campaigns—During the past several years local communities throughout the country have been carrying on intensive campaigns to secure the immunization of young children against diphtheria. During such campaigns the health department has established many free clinics, at which toxin-antitoxin could be secured. These have included the regular health department clinics, infant welfare stations, school clinics and other special clinics. In Syracuse and Detroit campaigns are now being inaugurated in which there will be no free clinics but the health department will devote all of its energy toward securing immunization at the hands of the family physician. The outcome of such a program will be watched with keen interest. Success depends upon the united support of organized medicine. In each instance the health department will, of course, continue its policy of education through the many channels which have been used for this purpose and will also serve as a depository for records. (Those who are carrying on campaigns this year involving unique features are urged to submit their experiences to the Editor of this section of the JOURNAL.)

Bellevue-Yorkville Demonstration—In October, 1928, the Bellevue-Yorkville Health Demonstration in the City of New York issued a reference handbook on the principal causes of mortality during the pre-demonstration. The handbook, which consists of tables and charts, was prepared by G. J. Drolet, Consulting Statistician. There are portrayed the vital statistics for the 5 years, 1922–1926, with separate information for 1925 and 1926, intended as a handbook in guiding projects and in measuring the progress of the work which has been undertaken. Separate data have been published for each of the 25 sanitary areas, and the general death rate of each area has been standardized to enable comparisons with other areas and with the United States as a whole. The general death rate during the 5-year period averaged 17.35; standardized, 16.99. Leading causes of death were organic heart disease, pneumonia, accidents, tuberculosis and cancer.

LABORATORY

C. C. YOUNG

COMPARATIVE STUDIES IN THE LABORATORY DIAGNOSIS OF SYPHILIS

MARCELLA OGLESBY AND HAROLD J. KNAPP, M. D., FELLOW A. P. H. A.

Laboratories of the Division of Health, Cleveland, O.

THREE thousand sera were tested by the Wassermann, Kahn and microscopic slide precipitation tests, in an effort to devise a reliable and practicable system for the diagnosis of syphilis in this laboratory. It was thought that this series would aid in the evaluation of the relative merits of the three tests.

The Wassermann test was performed according to the Cleveland Method,[1] with a cholesterolized antigen of exceptional sensitivity.

The Kahn test was performed as described by Kahn[2] in his book, *Serum Diagnosis of Syphilis by Precipitation,* with a standard antigen kindly supplied by him. Later a standard Kahn antigen prepared by us, but titrated also in Dr. Kahn's laboratory, was used.

The microscopic slide precipitation test was performed as described by Kline and Young,[3] except that mixing was done by rotation alone, the use of a toothpick having been found unnecessary by the authors of the test, since the publication referred to. The antigen was furnished by Dr. Kline, and was prepared by him as described in a recent article.[4] The "very sensitive emulsion" was used in this series.

The results of the comparative tests are recorded in the following tables. (In cases of disagreement, whenever there was sufficient sera, tests were repeated.)

The agreement between the three tests was, on the whole, very close. Greater positivity was shown by the Wassermann and slide tests, in both of which the most sensitive antigens were used, than by the standard Kahn test. It is reasonable to assume that greater agreement would have been reached if the special, more sensitive Kahn antigen had been used, as in his presumptive test.[5] The high positivity of the Wassermann in this series is believed to be due in part to the unusual sensitivity of the Wassermann antigen used. This antigen was so sensitive that routine replacements of it would be unlikely. It is probable that in a routine procedure where antigens of ordinary sensitivity are used, relatively more positive results would be obtained by both Kahn and slide tests.

TABLE I

	Total No.	Positive	Doubtful	Negative	A. C.
Kahn	3,000	548 = 18.26%	52 = 1.73%	2,400	
Wassermann	3,000	643 = 21.43%	19 = 0.63%	2,338	33
Slide	3,000	662 = 22.06%	53 = 1.76%	2,285	

++, +++ and ++++ are considered positive; + and ±, doubtful.

TABLE II

Total No.		
	Comparison of Wassermann and Kahn Tests	
3,000	99 positive Wassermann reactions gave negative Kahn reactions 34 negative Wassermann reactions gave positive Kahn reactions	Agreement 93.2%
	53 Wassermann reactions gave weaker Kahn reactions 14 Wassermann reactions gave stronger Kahn reactions	Agreement and Rel. Agr., 95.5%
	Comparison of Wassermann and Slide Tests	
3,000	66 positive Wassermann reactions gave negative Slide reactions 63 negative Wassermann reactions gave positive Slide reactions	Agreement 93.4%
	29 Wassermann reactions gave weaker Slide reactions 38 Wassermann reactions gave stronger Slide reactions	Agreement and Rel. Agr., 95.6%
	Comparison of Slide and Kahn Tests	
3,000	106 positive Slide reactions gave negative Kahn reactions 17 negative Slide reactions gave positive Kahn reactions	Agreement 92.7%
	83 Slide reactions gave weaker Kahn reactions 12 Slide reactions gave stronger Kahn reactions	Agreement and Rel. Agr., 95.9%
	Anticomplementary Reactions	
33	17 A. C. reactions gave positive Kahn reactions 21 A. C. reactions gave positive Slide reactions	

Positives with positives, doubtfuls with doubtfuls, negatives with negatives, are considered agreements; positives with doubtfuls are considered relative agreements; only positives with negatives are considered disagreements.

To determine the merits of the microscopic slide method as compared with the tube method, the following tests were performed on 1,000 sera: one, the regular slide test with Kline antigen; the other, a tube test exactly like the Kahn, except that the same Kline antigen was employed as was used in the slide test. There were no disagreements. There were sixteen relative agreements in which the slide test gave more strongly positive results, and one in which the tube test showed stronger positivity.

This would seem to indicate that clumping on the slide is somewhat better than in the tube. Microscopic readings in the slide test are striking, and are much easier to read than are macroscopic readings in a tube.

A comparison of the standard Kahn antigen with the Kline "very sensitive antigen emulsion" was made by performing two tests on each of 1,000 sera: one, the standard Kahn test; the other, a test similar in every respect, but utilizing the Kline antigen.

The results of this comparison are given in Table III:

A comparison of the Kahn Presumptive Test with the slide test using Kline V. S. A. E. would be interesting, and is in prospect.

CONCLUSIONS

Innumerable Kahn tests performed in various laboratories have established the reliability of precipitation procedures in the diagnosis of syphilis. It has been decided to discontinue the Wassermann

TABLE III

Total No.	Comparison of Results with Two Antigens
1,000	51 tests positive with Kline V. S. A. E. were negative with standard Kahn 4 tests positive with standard Kahn were negative with Kline V. S. A. E.
	20 tests gave stronger reactions with Kline V. S. A. E. 7 tests gave stronger reactions with standard Kahn

in the Cleveland Division of Health Laboratories, and replace it with two precipitation tests: the standard Kahn, and the slide with the Kline V. S. A. E. It is believed the two will supplement each other excellently. The standard Kahn is a well-tried test of satisfactory sensitivity. In the slide test, a maximum of sensitivity will be obtained. Local experience thus far indicates that a negative slide test (Kline V. S. A. E.) gives as complete an assurance of freedom from luetic infection as may be given by any one serologic test. It should therefore be of especial value in problems of immigration, food control, or court action.

The presumptive Kahn may give the same assurance, but it has not been tried out in this laboratory. The slide test was chosen rather than the presumptive Kahn because it requires less serum, is easier to read, quicker to perform, and gives uniform results at low temperatures.

The determination of the occurrence or absence of non-specific reactions in the slide test using the V. S. A. E., as in the Kahn presumptive test, should be left to clinical workers, since clinical data obtained at a public health laboratory are both meager and unreliable. However, data presented in work as yet unpublished by Kline, *et al.*, indicate that the Kline reaction is specific.

In these laboratories, disagreements between the two tests are carefully rechecked. Where serum is positive by the slide test and negative by the Kahn, a Kahn presumptive test is performed, and also a slide test using the sensitive antigen emulsion. Better results are thus obtained than was possible with a single Wassermann; while less time, effort, and expense are required, due to simplicity of procedure in precipitation tests.

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VITAL STATISTICS

LOUIS I. DUBLIN, PH. D.

Deaths of Wage Earners—Figures based on conditions existing among wage earners insured in the Metropolitan Life Insurance Company, show that wage earners who die between the ages of 35 and 45 years leave on the average 2.7 young children. Those dying between 25 and 35 years leave on the average 2.1 dependent children, while those under 25 leave 1.4 such dependents. Of all the fathers, aged 35–44, who died with dependent issue, more than 70 per cent left 2 or more children under 16. Nearly one-fifth of such fathers left 4 children, and nearly one-fifth, 5 or more children. Among the fathers dying between 25 and 35, approximately 60 per cent left 2 or more dependent children; while of deceased fathers below 25, about one-third left 2 or more dependent children. Foreign born fathers leave more dependents, on the average, than do the native born, but the number left by colored men does not differ essentially from that by whites.

A relatively few causes of death are responsible for the major part of this family damage. In the interval 25–44 years, nearly 6 deaths out of every 10 among white male wage earners were due to tuberculosis, influenza, pneumonia, heart disease and accidents. These conditions cause, respectively, 22.7 per cent; 12.6 per cent; 11.5 per cent and 14.2 per cent of the total mortality.—*Stat. Bull.*, Met. Life Ins. Co., 9: 7–9 (Sept.), 1928.

Deaths among Jews—A study was made in 1925 of the mortality records of 557 Jews in the State of New York, outside of New York City. Buffalo recorded 141 deaths among Jews, Albany 55, Syracuse 41, and Mount Vernon 21. Seventy-six deaths occurred in rural New York, and 35 of these were in Sullivan County where there are a number of tuberculosis sanatoria. It was found that 36.2 per cent of the decedents were native born, and 63.6 per cent foreign born. Forty per cent were Russian by birth; 8.8 per cent Polish; 5.0 per cent German; 4.8 per cent Austrian; 1.7 per cent Hungarian and 0.8 per cent English, Scotch or Welsh.

The proportion of deaths from heart disease was higher among Jews than for the general population of the state, exclusive of New York City, being 23.0 per cent of all deaths for the former and 20.5 for the latter. In the age group 15–24 years the proportion ascribed to heart disease was three and one-half times greater than the corresponding figure for the general population. The deaths due to diseases of the respiratory system were 10.9 per cent of all deaths among Jews and 8.7 per cent among the general population. The excess was particularly marked after the 65th year, being 14.9 per cent for Jews and only 7.1 per cent for the general population. The proportion of deaths from cancer was somewhat lower among Jews, being 8.2 per cent, as contrasted with 9.1 per cent. The deaths from tuberculosis were 7.3 per cent for Jews and 6.6 per cent for the general population. In the younger age groups, however, the proportion among Jews was considerably lower. In the 15–24 year group there were 25.0 per cent deaths among Jews in contrast with 31.6 per cent, and in the 25–44 year group, 18.8 per cent in

contrast with 22.3 per cent among the general population. The proportion of deaths from diabetes among Jews was more than double that for the general population, being 4.2 per cent and 1.7 per cent, respectively. In the age group 45–64 years deaths from diabetes were 9.3 per cent among Jews and represented almost one-tenth of the total deaths. Diseases of the digestive system were responsible among Jews for 6.1 per cent of all deaths.—J. V. DePorte, Causes of Death among Jews in New York State (Exclusive of New York City), 1925, *New York State J. Med.*, 28: 1155–1159 (Oct. 1), 1928.

Health of London 1927—The population of the County of London in the middle of 1927 was estimated at 4,555,000 including 9,000 non-civilians. The births during the year were 73,263, giving a birth rate of 16.1 per 1,000, which is lower than for 1926 and 1925. Since 1921 the number of births has been decreasing at the rate of 4,000 annually. The deaths were 55,170 or 12.1 per 1,000. This rate is higher than in the two preceding years.

Five cases of smallpox occurred in the county, of which two were fatal. Three patients were unvaccinated at the time of infection, and 2 of these belonged to the fatal group. Up to December 31, 1927, a total of 115 children was dealt with at a special clinic for diphtheria carriers; 56 were able to return to school in less than 4 weeks, 32 in 4 to 8 weeks and 1 was under treatment for 19 weeks. The remainder were still under treatment. Deaths due to diarrhea were considerably below the average. The mortality from puerperal fever was much lower in boroughs with poorer class populations than in those occupied largely by the well-to-do. During the 5 years 1921–1925 the average annual death rate per 1,000 births was 0.88 for a poorer group of boroughs and 1.80 for a well-to-do group. In 1927 there were 267 notifications of puerperal fever and 892 of puerperal pyrexia. The deaths from cancer during 1927 were 6,774 with a death rate of 1.49, which is higher than in 1926 and 1925. The cancer mortality among women has been decreasing in London in the last ten years.—*Brit. M. J.*, 2: 448–449 (Sept. 8), 1928.

Population of Germany—The extremely low birth rate of the war years and the decline of the postwar period, together with the losses in able-bodied men, have materially changed the distribution of the various age groups in Germany. The excess of boys over girls in the first years of life is now even greater than it was before the war. According to the last prewar census there were 505 boys per 1,000 children under 1 year; in 1925 there were 509 per 1,000. The birth losses of the war period affected the census of 1925 almost exclusively in the 6 to 10 age groups. In the 7 and 8 year olds the numbers are not equal to 50 per cent of the prewar status. The 10 to 25 age groups were not markedly influenced by the effects of the war. The losses of men on the battlefields have produced in the age groups a marked excess of women over men. In the 25 to 30 group there was in 1925 an excess of 1,151 women over men as compared with 1,002 in 1910. The 30 to 35 group shows an excess of 1,260 in 1925 as contrasted with 1,001 in 1910. There are more adults and fewer children than before the war. In 1910, 33.9 per cent of the total population of the country was under 15 years of age; according to the census of 1925 only 25.7 per cent was under 15 years. In 1925 the number of children between the ages of 6 and 14 was about one-fourth less than in 1910. The number of minors in Germany is now 38.2 per cent of the total population, as compared with 45.3 per cent in 1910.

Since 1910 the number of unmarried men decreased 4.4 per cent while the number of unmarried women increased 0.2 per cent. The widowers have increased 12.7 per cent and the widows 21.7 per cent. Among women the increase is chiefly in the middle age groups. The number of divorced men has increased 119.2 per cent, and the women 120.6 per cent. This increase is especially noticeable in the younger age groups.—*J. A. M. A.*, 91: 977–978 (Sept. 29), 1928.

Vital Statistics of Germany for 1927—In the vital statistics of Germany for 1927, the increase in the number of marriages is especially significant. In 1926, there were 483,198 marriages contracted; for 1927, the number was 538,525, an increase of 11.5 per cent. This increase from 7.8 per 1,000 population, in 1913, to 8.5 per 1,000 in 1927 is all the more striking in view of the fact that the percentage of married men was already much higher than in the prewar period. The increase was especially marked in the large cities: Berlin, Hamburg, Bremen, and in certain provinces or states: Saxony (18 per cent), Upper Silesia, and Thuringia. The Prussian Bureau of Statistics ascribes the increase to the fact that the proportion of persons of marriageable age to the whole population was much greater than before the war. In 1910, Prussia, with a population of 40,000,000, had 22,300,000 above the age of 20, whereas, in 1925, with a population of 38,000,000, there were 24,200,000 above the age of 20. Unfortunately, in spite of the increase in the number of marriages, there was a decline in the number of births. If we note further that the number of women of childbearing age in the whole population is 2,700,000 greater than before the war, and that, in spite of that fact, the number of living births was decreased by about 445,000, the decrease in the number of births appears even more significant. In Berlin, the birth rate has fallen from 19.4 (1913) to 10.6 (1927).

The total number of deaths in 1927 was 757,000, or 22,900 more than in 1926. The death rate in 1913 was 14.8; in 1927, 12.0. The increase of the mortality for 1927 over that of 1926 was due chiefly to the influenza epidemic of the first quarter and to the unfavorable weather conditions, especially during the last quarter of 1927. The infant mortality for 1927 shows a further decline. Owing to the drop in the birth rate and to the increase in the death rate, the net gain in population for 1927 was 90,000 less than for 1926. The excess of births over deaths (403,000) is only about half that of the prewar period.—*J. A. M. A.*, 91: 1208 (Oct. 20), 1928.

A Decline in Birth Rates in Japan—In recent years, the extraordinarily high birth rate of Japan has astonished the world. According to the records of the bureau of statistics, the numbers of births for the last half-century were: 1872, 57,000; 1883, 1,000,000; 1915, 1,500,000; 1920, 2,000,000; 1926, 2,100,000. The principal causes of the rapid rise of the birth rate after the Meiji restoration in 1868 were investigated and found to be as follows: (1) The people have married in order to have children; (2) the law has prohibited birth control, which was practiced in the Tokugawa era just before the restoration; (3) their marriages have not been contracted as early as in former times, when boys of 16 or 18 married girls as young as 13; (4) one of their principal foods is fish, which is thought to enforce the reproductive power; (5) venereal and other diseases which affect the nervous system have not been so frequent recently; (6) an income tax allowance has been made for the children, as in England.

The climax of the high birth rate

seems to have come in 1926, as the births in 1927 were 50,000 less than in 1926. At the same time the infant mortality rate has become higher than ever, owing to beriberi, tuberculosis and hereditary venereal disease. As a result, the Tokyo authorities are planning to investigate all births and miscarriages of women up to 40 years of age in the city.—*J. A. M. A.*, 91: 1205–6 (Oct. 20), 1928.

Vital Statistics of Singapore 1927—The population of Singapore for the year 1927 was 428,153. The total number of deaths for the year was 14,165, and the death rate was 33.08 per 1,000 population compared with 32.04 in 1926 and 28.21 in 1925. The birth rate was the highest on record, being 33.05 per 1,000 in contrast with 31.52 in 1926 and 31.19 in 1925. There was an infant mortality rate of 228 per 1,000, the corresponding figure for 1926 being 232. The infant mortality rates ranged from 146 for Europeans to 219 for Chinese and 355 for Malays. Making corrections for Chinese emigration, the Chinese rate was about 181. Among the notifiable diseases there were 19 cases of smallpox and 7 deaths; 29 cases of diphtheria and 9 deaths; 2 deaths from whooping cough and 8 from measles; there were no scarlet fever cases. Tuberculosis caused 1,523 deaths and pneumonia 2,291, in contrast with 1,370 and 1,843, respectively, for 1926. The deaths from these two diseases constituted 25 per cent of the deaths from all causes. There were 272 deaths from heart disease during the year, and 606 from diarrhea and enteritis. Ninety-one deaths were due to puerperal causes, and 354 to accidents.—*Ann. Rep. Health Dept. Singapore for 1927.*

Decline of Vienna's Birth Rate in 1927—The recent report on the vital statistics of Austria for 1927 contained the following data: The number of marriages for the year was increased over that of the previous year, but in Vienna there was a decline from 17,791 to 16,257. The number of living births in Austria was 8,182 below the registration for 1926. The birth rate dropped from 19.7 per 1,000 to 18.3 per 1,000, whereas in 1913 the birth rate was 24.4. The mortality in 1927 was little different from that of 1926. In some of the provinces, especially in the rural districts, there was a slight decrease in mortality. The regions with the highest birth rates present also the highest mortality. The mortality of Vienna is somewhat lower than the average for Austria. The excess of births over deaths (for Austria as a whole) is falling rapidly. This is due to the decrease in the birth rate and the very slight increase in the death rate. In Vienna in 1927 there were 20,888 living births (in 1926, 22,223; in 1913, 37,632). This represents a decline of 40 per cent from the record for the last year before the war. The decrease in the population of Vienna for 1927 amounted to 5,574, whereas in 1916 the population remained unchanged and, in 1913, had shown an increase of 4,977.—*J. A. M. A.*, 91: 1050 (Oct. 6), 1928.

PUBLIC HEALTH ENGINEERING

ARTHUR P. MILLER, C. E.

Water Supply Contaminated through Bleeder Valves—Crisfield, Md., a fishing hamlet of approximately 4,000 people, situated in Somerset County on the Little Annemessex River, is supplied with water from drilled wells. It has no sanitary sewerage system and but one storm sewer. The topography is flat, the greatest elevation above mean sea level being between 7 and 8 feet. When analytical results of tap water samples indicated an "abrupt and serious deterioration" of the quality of the water supply, representatives of the Maryland State Department of Health made an investigation. A unique and interesting cause of contamination was revealed.

The first discovery was that an ice plant was returning condenser cooling water to the receiving basin of the city supply. An inspection of the condenser basin disclosed that it contained approximately an inch of sludge consisting of bird excreta. This condition was corrected by discharging the condenser cooling water into the river, but little improvement showed in the quality of the water supply.

Due to normally high ground-water elevation, the mains are inundated with tidal water. This condition together with the fact that there existed several leaks in mains (the town was receiving a revenue from only half the water pumped) indicated that whenever it became necessary to close valves on the mains, which was often done to allow the standpipe to fill, tidal waters entered the mains. A pitometer survey proving too costly, town employes uncovered the mains at odd times and repaired several leaks. This resulted in an improvement in the water in some sections of the town but samples from oyster packing plants remained unchanged.

It was then found that in almost all packing houses there had been installed bleeder cut-offs to drain the piping above the ground to prevent freezing. This scheme resulted in the rise and fall of tidal water in the service connections between the bleeder cut-offs and the taps. When the cut-offs were changed to a position above the ground water elevation, permitting the pipes to drain but keeping ground water out of the system, satisfactory analytical results were obtained.

The investigators conclude that the repairs to the mains and the corrective change in the location of the bleeder cut-offs were the contributing factors toward obtaining a water of satisfactory quality.—Abstracted from a report of A. E. Goodrich, Div. Engr. Md. State Dept. of Health, dated Mar. 16, 1928, by J. L. Robertson, Jr. Asst. San. Engr., U. S. Public Health Service.

Properties of the Bactericidal Substance in Milk—Several workers have established the fact that fresh raw milk will inhibit for a time the growth of a variety of organisms. Many views have been advanced in explanation of this phenomenon. From the work done by the author and others, it is concluded that there exists in cow's milk a substance which is capable of restraining the growth of certain bacteria for definite periods. With the aim of obtaining more information about the principle, observations were made on: (1) The time of maximum concentration, (2) distribution in the quarters of the udder, (3) reactivation, (4) filtrability,

(5) effect of absorbents, and (6) effect of desiccation. From these observations the following conclusions were reached: The substance is present in the colostrum and milk of the first few days of lactation as well as later. Its concentration varies in the secretion from various quarters of the same cow. Its activity is diminished by heat and cannot be restored again by the addition of active milk. The principle is present in whey and readily passes through the coarsest Berkefeld filter although a considerable portion is retained by N candles. The finest filter (W) completely retains it. It is absorbed by animal charcoal but not by kaolin, kieselguhr, or bolus alba. It can be desiccated and its presence has been demonstrated in one brand of dried milk.—F. S. Jones, *J. Exper. Med.*, 47, 6: 877–888 (June), 1928. Abstr. P. R. Carter.

Ship Fumigation Determined by Observed Rodent Infestation—Report is made of work done to determine if fumigation of vessels need be done in all cases since some vessels may be free from rats. The authors made a study of 100 vessels and concluded that a careful inspection to determine the number of rats present was practicable. A routine procedure was established, after which fumigation was practiced only where inspection showed the need. As a consequence the following conclusions were drawn: (1) More efficient application of regulations regarding fumigation —When agents request extension of routine fumigation period, compliance can be based on the known absence of rats. (2) More efficient fumigation of vessels —Knowledge of the whereabouts of rats and their approximate numbers stimulates fumigators to more diligent effort. (3) Avoidance of expense and delay of shipping by avoiding unnecessary fumigation. (4) Conservation of effort, equipment and material of quarantine station without relaxing essential precautions against dangerous vessels. (5) Reduction in fumigating personnel through elimination of unnecessary fumigations. (6) Definite stimulation of rat proofing of vessels and encouragement of trapping and other rat eradicative measures by steamship agencies striving to obviate cost of fumigation and attendant delay.—C. V. Akin and G. C. Sherrard, *Pub. Health Rep., Reprint* 1149: 861–867 (Apr.), 1927. Abstr. H. B. Foote.

The Disposal of Effluents from Beet Sugar Factories—

The waste disposal problems which confront so many industries present particular difficulties and burdens to the beet sugar industry. The manufacture of beet sugar being limited to about three months of the year throws a heavier charge on the cost of production for a given capital expenditure than is the case in industries which are employed throughout the year. This consideration assumes especial importance in view of the large quantities of water used and waste produced in the manufacture of beet sugar.

The location of beet sugar factories in agricultural districts and on streams of comparative purity renders any contamination of the stream more noticeable and more significant than that which is caused by factories situated in industrial areas in the neighborhood of streams which have already reached a high degree of pollution.

During the early part of the period for which the sugar factory is working, the flow of many streams is low and this may require greater storage facilities for the effluent or a higher degree of purity. The lower temperatures at this time of the year also affect adversely the activity of bacteria and the efficiency of biological methods of purification. In extreme cases, where a stream is frozen over, further difficulties are introduced since it has been shown that in such cases the dissolved oxygen content of an unpolluted stream may fall to as low as 40 per cent of saturation.

Four different wastes are produced by beet sugar factories. Beet carrying and washing water, amounting to about 2 m.g. per 1,000 tons of beets treated daily, is the least objectionable, containing some suspended mineral matter and ordinarily but 20 to 50 p.p.m. sugar, and having an oxygen consumed

value of about 340 p.p.m. This is treated successfully by plain sedimentation for 6 to 8 hours, and by precipitation with lime.

Diffuser battery and pulp press waters, together amounting to 300,000 gals. per 1,000 tons of beets, are more objectionable and more difficult to treat. Combined, these carry 0.6 to 0.8 per cent of sugar and an equal amount of other organic matter. Among methods used with some success in treating these are: Addition of lime followed by carbonation, with or without the mixing in of beet carrying and washing water; plain sedimentation and land irrigation; septic tanks with or without the use of lime; contact beds; trickling filters; fermentation with or without lime to neutralize the butyric acid formed; and activated sludge. Each process has definite limitations.

Filter press lime sludge is readily disposed of by application to land, preferably treated previously with quicklime.

Steffens waste water, the production of which is limited to the United States, is quite objectionable, having an oxygen consuming power of 3,000 p.p.m. and containing all the mineral salts of the beets which may be toxic to fish.—A. J. V. Underwood, *Indust. Chem. & Chem. Manuf.*, 3, 29: 260–265 (June), 1927. Abstr. D. E. Kepner.

Refuse Dumps—The cause of odor from refuse dumps is due either to the decomposition or the burning of organic matter contained in the refuse. The obvious remedy therefore would be to thoroughly separate all garbage and other organic matter for disposal in other ways, such as hog feeding, incineration, or the recovery of the grease and tankage as marketable products.

Separation of garbage from other refuse is commonly practiced and if effectively carried out will be a considerable help in reducing the odor at dumps, but there is certain to remain more or less organic material adhering to boxes, paper, etc., in the shape of rags, bedding, and the like, or else as garbage that has failed of separation. This material decomposes in the dump during warm weather or catches fire with the ashes, rubbish and the unburned coal and is thus the source of the offensive and far-reaching odors in question. These are a common nuisance in the outskirts of most large cities, depreciating property values and causing general discomfort. They may be carried by the wind under favorable conditions for a distance of several miles. Their complete elimination under ordinary conditions—physical and political—found in most cities is not believed to be practicable.

The following four measures combined with effective separation of other refuse from the ashes will go far to reduce the odor at dumps:

1. All material should be covered with earth without delay. This is the most important measure to be applied.

2. As much as possible of the combustible rubbish (boxes, crates, paper, cartons, etc.) should be burned by itself (preferably in a suitable incinerator) and the dump confined to well-burned ashes.

3. The exposed face of the dump should be held to the least possible area by dumping at the margin of the fill only and carrying it to the full height, keeping the face covered with earth.

4. Fires should be extinguished at once and not left to smoulder. This can be best done by maintaining a constant water supply reaching all parts of the dump for quenching, but where the dump is too small to warrant the expense necessary for this, much can be done by smothering with sand or earth before the fire extends itself. When once started and after reaching into the body of the dump, such smouldering fires are difficult to extinguish.

Experience has indicated the great difficulty in preventing dumps from becoming nuisances. In addition to odor, there are the objections of the scattering of paper and other light material by the wind and the breeding of vermin and flies. If their use is unavoidable they should be placed in locations remote

from habitations.—Abstracted from a letter prepared by Kenneth Allen, Chairman of Committee on Collection and Disposal of Refuse, Public Health Engineering Section.

Sewage-Polluted Surface Waters as a Source of Water Supply—The suitability of sewage polluted bodies of surface water as a source of water supply is dependent on several factors, including: (a) The character and extent of their pollution, (b) the location of sources of pollution with respect to sources of water supply, (c) the degree of protection to these sources afforded by natural agencies, such as dilution and self-purification, (d) the extent of further purification afforded by artificial water purification, and (e) the practicability and economy of supplementary artificial measures for reinforcing, where necessary, the protection afforded by water purification.

The effects of pollution of sources of water supply are modified by bacterial changes occurring in sewage, by seasonal influences, by dilution and self-purification. In any appraisal of conditions of pollution surrounding a given source of water supply, account also should be taken of the relative sizes of the population groups jointly responsible for such conditions and of their respective locations, on a time-distance basis, with respect to that source.

The average well designed and operated rapid sand filtration plant, aided by chlorination, can produce consistently a final effluent meeting the revised Treasury Department Standard from river waters of the Ohio type having an average *B. coli* index not exceeding 5,000 per 100 c.c. For Great Lakes water, the corresponding limit appears to be less than 2,000 per 100 c.c.

Among the supplementary measures currently practiced or proposed for reinforcing existing water purification processes are: (a) long-time storage, (b) double-stage coagulation, sedimentation and filtration, and (c) raw water pre-chlorination.

The total cost of water purification in the United States ranges from 40 cents to $1.40 per capita annually. Although the cost of sewage treatment may range as low as 40 to 95 cents per capita annually, the extra cost of intercepting sewers, where necessary, may increase the total cost of this measure by from $1 to $10 per capita. Exclusive of intercepting sewers, the per capita costs of water purification and of sewage treatment appear to be nearly equal.—H. W. Streeter, *Pub. Health Rep.*, 43, 24: 1498–1522 (June), 1928. Abstr. O. C. Hopkins.

AN OMISSION

In the July issue of the Journal, page 933, appeared an abstract of "Comparison of the Temperature and Bacterial Count of Milk and Foam during certain Stages of the Pasteurization Process." The names of two of the collaborators were inadvertently omitted: C. S. Leete of the Bureau of Dairy Industry, U. S. Dept. of Agriculture, and Prof. L. F. Miller of the University of Minnesota. The abstract carried only the names of H. W. Whittaker and R. W. Archibald, Minnesota Dept. of Health, as authors.

INDUSTRIAL HYGIENE

EMERY R. HAYHURST, M. D., AND LEONARD GREENBURG, PH. D.

FIFTH INTERNATIONAL MEDICAL CONGRESS ON INDUSTRIAL ACCIDENTS AND OCCUPATIONAL DISEASES, BUDAPEST

September 2–7, 1928

THE Budapest Meeting of the Fifth International Medical Congress on Industrial Accidents and Occupational Diseases began with a huge reception Sunday night, September 2, 1928, in the Hotel St. Gellert facing the Danube, where the assembling delegates and guests were presented to the officials, both of the Congress and of the Hungarian Government. An accompanying exhibition on industrial safety and welfare was also opened for the week in the Institute and Museum of Social Hygiene by Dr. Joseph Vass, the Royal Hungarian Minister for Public Welfare and Labour. The magnitude of this Congress may be appreciated when we are shown a list of the 2,400 who had registered prior to the first day. The meeting of the International Permanent Committee was held at 9 A.M. Monday in the Academy of Science, centrally located in the city, which building was the headquarters for general assemblages, the secretaries, etc. The address of welcome of Dr. Vass, who is a member of the Catholic clergy, on behalf of the Hungarian Government, was entirely in Latin. At this first meeting the assembly hall and gallery were completely filled with people. Plenary sessions were held Monday afternoon and Tuesday morning, while the sectional meetings began Tuesday afternoon and were continuous, mornings and afternoons, to and including Thursday.

The program was printed in five languages—Hungarian, German, French, Italian and English; however, the different speakers presented their papers, as a rule, in their native languages. One had opportunity to meet in person many foreign notables in the field such as Dr. Tibor de Verebely, leading Hungarian surgeon and the President of the Congress, Professor William de Friedrich, Vice-President, and Dr. George Gortway, Secretary, and many whose names have been familiar for years. While it may be said that the stress of the sessions was surgical in nature, or, more properly on orthopedic surgery, the meetings were divided into three groups: industrial accidents, industrial hygiene, and general industrial welfare, each having morning and afternoon sessions throughout the period.

Possibly 75 were in attendance from America, the chief party being led by Dr. Fred H. Albee and Dr. Richard Kovacs, President and Secretary, respectively, of the Physician Travel Study Club of America. The names of the Americans on the program, in addition to these two, were Drs. D. Shapiro, Harry C. W. S. de Brun, E. Gidding, E. L. Fisk, Raphael Levy, O. Glogau, New York, N. Y.; Dr. Prather, U. S. Public Health Service, representing Dr. R. R. Sayers and W. P. Yant, Washington, D. C.; Dr. Henry H. Kessler, Newark, N. J.; Dr. R. M. Carter, Green Bay, Wis.; Dr. Orenstein who, while coming from Johannesburg, is really

American; and Dr. Emery R. Hayhurst, Columbus, O.

The sessions on Industrial Hygiene were held in the Institute for Industrial and Social Hygiene, a 6-story building located some distance from the Academy, while those on surgery were held at Dr. Verebely's Clinic, also some distance, but these necessary sorties to meeting places were welcomed as interludes in the intensity of the program. The industrial hygiene papers were mostly upon specific topics such as the diagnosis of lead poisoning, silicosis, fatigue and industrial physiology, rheumatism, neuroses, heart diseases, the special senses, asbestosis, halogen poisons, the hazards of certain trades and poisons, ankylostomiasis, anthrax mercury, pneumokoniosis, brass founder's ague, skin afflictions, syphilis, trauma and others.

A daily bulletin ranging from 15 to 31 pages, printed in five languages, was a convenient feature; also abstracts of all papers were mimeographed and ready for distribution the day following presentation, while an alphabetical directory of all those in attendance, who were registered prior to the meeting, was distributed the first day, likewise an Index Praelectorum of the 176 who presented papers. An unusually complete messenger service kept guests continually notified at their respective hotels of special entertainments and privileges.

Elaborate entertainment was furnished guests in the nature of steamer tours on the Danube, a gala dinner by the government at the Hotel St. Gellert, special receptions to the members of the International Permanent Committee, an evening for all guests in Angöl Park (located on the Island), and a final farewell banquet by the Municipality of Budapest, also at the St. Gellert Hotel.

A diagram of seats was made for all banquets and each was notified in advance of his or his party's table. The entertainment for ladies was especially elaborate, as our wives testified. Additional excursions to the country were also arranged on Friday and Saturday at the end of the week as well as opportunities to visit industries in and about Budapest. Many of the social and excursion events were gratis. The Americans likewise were entertained by Mr. Wright, the American Ambassador to Hungary, with a 5 o'clock tea on Wednesday at his residence.

The transactions of the Congress will be anticipated with eagerness.

The official delegates from the United States were Dr. Fred H. Albee, New York, N. Y., Dr. Francis D. Donoghue, Boston, Mass., Dr. Emery R. Hayhurst, Columbus, O., Dr. Francis D. Patterson, Philadelphia, Pa., and Dr. D. J. Prather, U. S. Public Health Service (all present). EMERY R. HAYHURST

DUBLIN CONGRESS OF THE ROYAL INSTITUTE OF PUBLIC HEALTH

August 14–20, 1928

WE arrived at this Congress early Tuesday morning, August 14, 1928, and registered at headquarters in The Mansion House, two blocks from our hotel, where we met Dr. T. N. Kelynack, the Secretary, and were introduced to Colonel Sir William R. Smith, Senior Vice-President and Principal, and Lady Smith. These remained especially solicitous for our welfare throughout the meetings. There were several places to visit in connection with the Congress and we accordingly placed our names on the large

cards hung up for that purpose at headquarters.

The Congress opened with an official reception given by the government at 9 P.M. Tuesday, in The Rotunda of The Mansion House, which was profusely decorated with flags and flowers. It was attended by President William T. Cosgrave and Mrs. Cosgrave of the Irish Free State, and General Richard Mulcahy, T.D., President Designate of The Congress and Minister for Local Government and Public Health, whose wife was in charge of the Ladies' Committee. There were fully 1,000 present at this reception.

The Inaugural Meeting of the Congress took place in The Rotunda of The Mansion House at 11 A.M. Wednesday, where members appeared in their official or academic regalia, including badges and other honors, and formed a procession to their seats, while many of the delegates from foreign countries were assigned seats upon the stage with the officials and guests of the Congress. Telegrams were sent to, and replies later received from H.M.The King, Patron, and H.R.H.The Prince of Wales, Vice-Patron of the Royal Institute. The proceedings were opened by Thomas Murphy, Chief City Commissioner of Dublin, followed by the Rev. Dr. Westrop Roberts, Vice-Provost of Trinity College, Dr. D. J. Coffrey, President of the National University College, Dublin, Dr. W. A. Winter, President of The Royal College of Physicians, Ireland, Dr. T. E. Gordon, President of The Royal College of Surgeons, Ireland, Dr. E. Magennis, President of the Apothecaries' Hall of Ireland, and Sir Thomas Oliver, Vice-Chancellor of The University of Durham, and Chairman of the Council of The Institute. A number of overseas delegates addressed the meeting, representing Australia, South Australia, India, the Settlement of Shanghai, [illegible] Switzerland, and the writer spoke a few words as a delegate from some American institutions. The next meeting place was announced as Zurich, Switzerland.

A luncheon was then extended to the members of the Congress by the Messrs. Arthur Guinness, Son & Co., under the chairmanship of Sir John Ramsden, its Chief Medical Officer, and followed by a trip through the enormous establishment.

We took the Peamount Sanatorium trip, 12 miles from Dublin, in the afternoon where several hundred tuberculous children are being treated according to the most modern methods, under the auspices of the Marchioness of Aberdeen and Temair, who has actively sponsored anti-tuberculosis work for years in Ireland. Other trips also were arranged for that day—to the Cappagh Open Air Hospital for Crippled Children, Newcastle Sanatorium, and one to the Crooksling Municipal Sanatorium, all located a few miles away from Dublin. We likewise greatly enjoyed the visit to Trinity College the latter part of that afternoon. For the evening, tickets were provided to the Irish National Theater for one of the finest plays we have seen—one characteristic of Irish life, and by an Irish troupe—" Professor Tim " (by George Shiels).

Sectional meetings began Wednesday afternoon, and continued during the meeting with long morning hours (9:30 to 1:00) and short afternoon hours (2:30 to 4:00).

Section I of the Congress was devoted to State Medicine and presided over by Registrar General E. P. McCarron and Sir William Milligan, there being 13 papers listed under its general sessions. The three sub-sections were (1) Municipal, County and Port Sanitation, under Dr. E. F. Stephenson and Alderman William Muirhead; (2) Epidemiology, under Sir John Moore, Dr. Thomas H. C. Stevenson, and Dr. Matthew J. Russel, with 10 papers, and (3) Housing of the Working Classes, and

Town Planning, under Dr. C. W. Dwyer and Professor L. Patrick Abercrombie, with 7 papers.

The trend of papers on State Medicine concerned malignancy, administrative public health matters, alcoholism, nervous diseases, industrial hygiene, milk, town planning, and small house construction.

Section II was on Bacteriology, Pathology and Biochemistry, and presided over by Dr. W. D. O'Kelly and Dr. James M. Beattie, with 8 papers, concerning research and various bacterial diseases.

Section III was on Maternity and Child Welfare, and School Medical Inspection, and presided over by Dr. J. A. Harbison and Professor A. Louise McIlroy, with 23 papers, concerning midwifery, social hygiene, and child and natal hygiene in various phases.

Section IV, on Production and Control of Milk and Food, was presided over by Professor J. F. Craig and Dr. Gerald Leighton, with 10 papers upon the questions of safe food supply, parasites, "wholesome milk," butter and margarine.

Section V, on Tuberculosis, was presided over by Sir William J. Thompson and Dr. P. C. Varrier-Jones, with 15 papers touching upon the prevention, sanatorium treatment, and education of tuberculous patients, and an interesting address upon the "Humor and Pathos of a Tuberculous Campaign," by the Marchioness of Aberdeen and Temair, also a couple of fine films upon the Papworth Village Settlement where perhaps 1,000 tuberculous workers with their families are self-supporting.

The scientific meetings closed with the Friday morning sessions.

Thursday noon a luncheon was given in the Royal Hibernian Hotel to some 80 persons connected with the Congress by The Right Hon., The Viscount Leverhulme. That afternoon visits were made by the women to certain municipal undertakings and housing schemes in Dublin while a sectional meeting was in session. The latter part of the afternoon we visited University College. On Thursday evening the Congress Banquet was held in The Mansion House, some 500 guests being present, and the chair presided over by Sir Thomas Oliver with short addresses by a number of prominent persons in health, official and religious circles. Among others was His Grace, The Most Rev. The Archbishop of Dublin, who proposed the toast of The Royal Institute of Public Health in a stirring address which was responded to by Col. Sir William Smith, who referred especially to the origin and subsequent progress of the Institute.

At the Garden Party at The Vice Regal Lodge given by Governor General and Mrs. James McNeil, at 4 P.M. Friday, there were some 1,200 persons present. Following the formal introductory program, the seven Americans present were again introduced by Sir William J. Thompson, Honorary Secretary of the Congress.

On the Saturday and Sunday following, excursions were arranged, even to distant parts of Ireland. Also on Sunday some of the delegates attended the morning services at St. Patrick's Cathedral.

The final meeting of the Congress was held at 9 A.M. Monday in The Mansion House, where universal satisfaction and appreciation of the Dublin arrangements were formally declared. We, however, left early Saturday morning for a trip to Killarney Lakes, Cork, and Blarney Castle.

EMERY R. HAYHURST

FOOD, DRUGS AND NUTRITION

WALTER S. FRISBIE

Recent Food Infections—This editorial discusses an outbreak of enteric fever, 90 cases being under treatment in London hospitals on August 14. The symptoms were mild with no vomiting and diarrhea but constipation with many manifestations of rose spots. Two cases were severe and 1 death was reported at Epsom. The organism held responsible was *B. paratyphosus B*, presumably distributed in food. Cream is under suspicion and the view is held by some that the withdrawal of the permission to use boric acid preservative is responsible. It is contended that this is unlikely since cream is produced from milk and permission to use boric acid in milk has not been a fact since 1912. It is further pointed out that the public has confused the paratyphoid outbreak with cases of food poisoning and that the rapid onset, accompanied by vomiting and diarrhea and frequent prostration indicative of food poisoning, is in marked contrast with the slow and mild development of the symptoms caused by *B. paratyphosus B*. All of these causative agents, however, are similar in that they belong to the Salmonella group of organisms. In England the *B. paratyphosus A* organism does not occur, C is occasionally found but the B type is common.—*Lancet*, 2: 334 (Aug. 18), 1928.

Rickets in Rats—Comparisons of Effects of Irradiated Ergosterol and Cod Liver Oil—Rats fed on Sherman diet B, when 28 days old were placed on Steenbock and Black's high calcium-low phosphorus diet 2,965 plus 10 per cent lard. This diet contained 1.07 per cent calcium and 0.178 per cent phosphorus. The rats were kept on this diet for 21 days, after which 2 per cent of the lard was replaced by cod liver oil, or irradiated ergosterol in olive oil, both being given separately and not mixed with the diet. The amount of ergosterol given was equivalent to 0.01 mg. per rat per day. After 14 days the animals were killed and autopsies showed intramuscular hemorrhages in 2 of the rats receiving ergosterol. The animals, studied as to (1) blood serum analyses, (2) histological examination of the bones, (3) bone analyses and (4) metabolism of calcium and phosphorus, showed that marked cure of rickets in rats is secured in 2 weeks by cod liver oil and by 0.01 mg. daily of irradiated ergosterol. The cure is accomplished without great increase in the retention of calcium or phosphorus as is shown by metabolism studies. Histologically the bones show substantially the same condition with the cod liver oil as with the ergosterol supplement.—Alfred T. Shohl, Helen B. Bennett and Katharine L. Weed, *Proc. Soc. Exper. Biol. & Med.*, 25: 551 (Apr.), 1928.

Acid Drinks and Enamelled Vessels—This article discusses a report by the assistant medical officer of health for Newcastle-upon-Tyne of an outbreak of poisoning following the consumption of an ice drink prepared in an enamelled vessel. The firm desiring to provide a refreshing beverage for its employes during a hot spell undertook to make "lemonade," the acid ingredient of which was tartaric acid. This was dissolved in hot water in enamelled buckets purchased for the purpose, the rather concentrated acid solution remaining in

the buckets over night. It was found that the enamel on these buckets had been attacked so that it could be removed with the finger. The enamel on these pails contained antimony oxide equivalent to 5 per cent of the metallic antimony. Antimony was also found in the "lemonade" taken from the pails to the extent of 0.013 per cent metallic antimony. This amount, according to the medical investigator, is equivalent to 1.52 gr. of tartar emetic in a 10 oz. tumbler; so that drinking one-third of a tumbler might be expected to result in definite symptoms. No other heavy metals being found in the beverage, the conclusion is drawn that the poisoning was due entirely to the antimony. Further comment is made that the buckets used for this purpose were not intended for food purposes by the manufacturer and that in those circumstances the enamel is so adjusted that ordinary acid solutions used in the household will not remove appreciable amounts of the glaze. It is suggested that containers of such character should be sufficiently labeled that they will not be used for food or drink purposes and that such outbreaks be given publicity for warning purposes.—*Lancet*, 2: 337 (Aug. 18), 1928.

A Bacteriological Study of Salad Dressing—A bacteriological examination is reported of 15 brands of mayonnaise, 12 of other salad dressings, 6 of olive mayonnaise, and 6 of olive relish. With the exception of a few samples of homemade mayonnaise only commercial products were studied, and the condition of all of the samples was good when the cans were opened. Of the entire number of cans, only 4 were found to contain anaerobes, and these were nontoxic. The number of aerobic organisms varied from 0 to 17,400 per c.c. The largest percentage of sterile cans was found among the salad dressings other than mayonnaise. These contained a starch paste, and it is thought that the heat used in preparing the paste and the acidity of the product were the chief facts contributing to sterility. The most probable source of contamination is considered to be the egg yolks. From 12 cans, sporeforming rods with morphological and cultural characteristics similar to *B. subtilis* and *B. mesentericus* were isolated. *B. coli communior* when introduced in broth cultures into the various foods disappeared rapidly. *B. subtilis* remained viable for a longer period of time.—F. M. Bachmann, *Wis. Acad. Sci. Arts and Letters, Trans.*, 23: 529–537, 1927. Abstr. *Exper. Sta. Rec.*, 59: 488 (Oct.), 1928.

Growth and Reproduction on White Bread with Various Supplements—The rations used in this experiment contained 70 per cent or more of bread made from high grade patent flour. In order to get representative results 3 kinds of bread were used—a commercial bread containing some milk, as well as lard, sugar, salt and yeast; and two specially prepared and containing the same amounts of yeast but one made with water and the other fluid milk. Rats 28 days old were placed on this experimental ration. Six series of experiments were conducted using for supplements whole milk at two different levels, egg, carrot, spinach, almond and lean beef. Charts are given showing the growth curves on the different diets. On a diet of dried bread 70 per cent and dried whole milk 30 per cent, there were normal growth, good health and reproduction. Similar results were obtained with dried bread 70 per cent and dried egg powder 30 per cent, 4 females bearing 68 young, 12 of which were placed on the diet of the mother rats at 28 days. Half made normal gain for 3 to 6 months, but the remainder showed signs of general weakness, nasal hemorrhages and rickets and

3 died within 6 weeks. Results with bread 90 per cent and milk 10 per cent were similar to bread 70 per cent and carrot 30 per cent. Growth was poorer than with egg or 30 per cent milk. Neither the bread and almond nor the bread and spinach diet was able to maintain the animals in health. The poorest records were made with bread and lean beef. No marked differences were shown between the kinds of bread used, and the best results were obtained on bread 70 per cent and milk 30 per cent, and on bread 70 per cent and egg 30 per cent.—Mary Swartz Rose and Grace MacLeod, *J. Nutrition*, 1: 29 (Sept.), 1928.

The Calcium of Cheese—An experiment was conducted to determine whether commercial cottage cheese, "a sour milk cheese," is really lower in calcium than other common cheeses—the rennet cheeses. The cheeses used were three different samples of colored American Cheddar, one white American Cheddar, three domestic Swiss, and one imported Swiss, two Dixie cottage cheese, and three of Borden's cottage cheese. The calcium was determined by the Shohl modification (*J. Biol. Chem.*, 50: 527–536, 1922) of the McCrudden method, precipitating the calcium from solution of ash as oxalate at pH 4.8 to 5.2, igniting and weighing as calcium oxide. It was found that the two rennet cheeses, Swiss and Cheddar, have approximately 14 and 9 times as much calcium as the cottage. The calcium is not only higher in the rennet cheeses but higher in proportion to the protein—for every 100 gm. of protein there are 3.37 gm. in the Swiss, 2.83 gm. in the Cheddar and 0.62 gm. in the cottage cheeses.

Cottage cheese, therefore, is a poor source of calcium and not a rich one as usually considered.—Katharine Blunt and Emma Sumner, *J. Home Econ.*, 10: 587 (Aug.), 1928.

Nutritive Value of Haddock and Herring—Young growing rats 21 to 25 days old and 40 to 50 gm. in weight were used in this experiment. The haddock was bought in small amounts in the open market and after being freed from the head and viscera was made into meal which contained many small bones. The herring was also made into meal which contained a small amount of bone material. Samples of the herring and haddock were analyzed for content of fat, nitrogen, moisture, ash, Ca and P. The herring and haddock were fed in a series of diets, each kind being fed alone and then in diets variously supplemented. Charts are given showing the rate of growth for the animals. When fed haddock alone and with the addition of salts, the animals developed ophthalmia, indicating a low vitamin A content. With the addition of vitamin A in the form of butterfat the animals improved rapidly for a short time, but after 2 months the animals died. Death was due to vitamin B deficiency, since it was found that the addition of 3 per cent yeast prolonged life. Herring free from bone contains sufficient vitamin A to prevent xerophthalmia but was found deficient in minerals and vitamin B. Herring proteins at the levels of 9 and 15 per cent were not adequate for the well-being of the second generation. Tables are given showing the supplementary value of fish proteins for cereal, legume seed and liver proteins. Herring and haddock were found to be poor supplements for the proteins of navy beans and peas, haddock being the better of the two. Both fish proteins have a supplementary value for the proteins of oats and wheat, herring having a higher value than haddock. The supplementary value of herring compares favorably with that of steak, liver and kidney and is higher than that of haddock.—M. C. Kik and E. V. McCollum, *Am. J. Hyg.*, 8: 671 (Sept.), 1928

Commercial Acidophilus Products—The investigation reported which was concerned with laboratory analyses alone is intended to throw some light on a number of commercial acidophilus products which might be expected to have therapeutic value. Eight such products were included in the investigation: 7 of these were milk and the 8th was a broth culture. By plating on whey agar, casein digest agar, meat infusion agar, and in the case of one product, tomato extract agar, and by incubating the plates at 37° C. for 3 days in air and in an atmosphere of 5 to 10 per cent carbon dioxide gas, the numbers of viable microörganisms were ascertained. Whether these organisms were *B. acidophilus* of strains known to have therapeutic value was determined by comparing their reactions in various sugar media with those of a stock laboratory strain of proven therapeutic value.

As a confirmatory test the critical surface tension in dynes was determined for each strain isolated. Five of the products examined were prepared in the East and were examined very soon after manufacture. Three products were obtained from the West and were shipped to New York City by air mail.

It was found that the broth culture which purported to be *B. acidophilus* was *B. bulgaricus*, and the maximum number of viable organisms was 40,000,000 per c.c. Of the 7 milk products examined 5 bore information on the label as to the number of viable organisms claimed. Of these 5 products only 2 fulfilled these claims as to numbers present, and in both cases the cultural reactions of the strain of *B. acidophilus* present were not identical with those of the stock laboratory strain, and were consequently considered by the investigators to be of doubtful therapeutic value. Three products were found to contain one-half or less than one-half the numbers claimed, and in 2 of these products the organisms present differed from the stock laboratory strain of *B. acidophilus*. One product examined contained authentic *B. acidophilus*, the maximum number found being 57,000,000 per c.c. The label of this product bore no claims as to numbers. One product, the label of which bore no claims as to numbers, contained a maximum of 170,000,000 organisms per c.c. These organisms were identical with the stock laboratory strain.

It is pointed out by the authors that at present there is no definite figure known for the minimum number of viable acidophilus bacilli requisite for therapeutic results. Attention is directed to the need for scientific experimentation to establish such a standard.

In the experience of the authors a daily dose of 1 quart of acidophilus milk containing not less than 100,000,000 organisms per c.c. is necessary to alleviate severe chronic constipation or acute diarrhea within 2 weeks. They add that a lesser number of viable organisms ingested for a longer period of time may be, in all probability, beneficial. It is recommended that the labels of all acidophilus products bear the following information:

(a) Date of manufacture
(b) Minimum number of viable organisms (*B. acidophilus*) at date of manufacture
(c) Minimum number of viable organisms (*B. acidophilus*) at time of earliest possible sale under normal conditions
(d) Date of expiration
(e) Minimum number of viable organisms (*B. acidophilus*) at date of expiration
(f) Type of *B. acidophilus* predominating—

N. Kopeloff, P. Cohen and P. Beerman, *J. A. M. A.*, 91: 1187 (Oct. 20), 1928.

CHILD HYGIENE*

MERRILL E. CHAMPION, M. D.

Studies on Infant Mortality—West coast cities have for some time had a lower infant mortality rate than eastern and southern cities, chiefly because in the race for health all cities do not start from the same base line. This is the conclusion of Dorothy Holland, Ph.D., and George T. Palmer, D.P.H., in a paper given before the American Child Health Association.

One of the first steps in finding out why one section of the country should be uniformly successful in preserving infant lives is to discover how the cities with low rates differ from the cities with high rates, Dr. Holland points out. Do the weather records show more sunshine in the low rate cities? do they have less poverty? or are they better instructed in health matters? Sunshine, temperature and other weather facts for each city are to be found in weather records. Census reports likewise give data on the amount of illiteracy; economic status is measured by the number of unskilled workers, nationality, etc.

Dr. Holland was able to secure the statistics for about twenty-five different influences which are believed to have a bearing on infant mortality. By mathematical means the importance of these was tested for approximately 100 cities for the years 1921 to 1925.

The peculiar features of the cities with low infant mortality were that they had relatively little rainfall, practically no illiteracy, and were of a relatively high economic status, as indicated by small percentages of unskilled workers and low percentages of negro population. The proportion of total foreign population did not exercise a marked influence one way or the other although the cities with a generous sprinkling of Scandinavians usually had low baby death rates.

From the relationships thus disclosed it was then possible to predict mathematically what a city's rate would be after making due allowance for these various favorable and unfavorable influences.

While the method worked out is experimental and deserves further study, Dr. Holland is hopeful that it will eventually be of material assistance to the public health profession in determining what rates can be expected of a city considering its external health advantages and disadvantages. The city with natural handicaps will not be expected to achieve the record of another with natural advantages unless very great effort is exerted. On the other hand, the favored city will have less excuse for a high infant death rate.

When fully worked out the table of predicted rates will reveal what cities have rates higher than the predicted rates and what cities have lower rates. This information itself will be of the greatest value as a basis for further search to find the causes responsible for the deviation of these cities from the expected rates.

The Place of Sickness Records in the School Health Program—"The results of a 4-year study of the illnesses among school children of Hagerstown, Md., seem to show that younger children suffer illness slightly more frequently than older children, and girls

* The abstracts for this month deal with papers given before the American Child Health Association on the occasion of its joint session in October with the American Public Health Association in Chicago.

more frequently than boys," according to Selwyn D. Collins, Ph.D., Associate Statistician, U. S. Public Health Service.

Respiratory diseases caused 46 per cent of all the illnesses occurring in the 4-year period, or an average of slightly more than 1 respiratory attack per child per year. Of the 16,475 respiratory attacks, 66 per cent were reported simply as colds, 21 per cent as tonsillitis or sore throat, and 10 per cent as influenza or grippe. "Sore throat" and "grippe" were the more frequent names used in the last two groups. Most of the influenza and grippe occurred in two outbreaks which attained their peaks in March, 1922, and February, 1923, respectively.

Next in frequency to the respiratory diseases comes headache and third is "biliousness" and similar terms. Fourth in the list come the communicable diseases, including measles, mumps, whooping cough, chicken pox, scarlet fever and diphtheria.

Public health and school officials are very active in the prevention of communicable diseases but are doing little or nothing about the greater problem of the respiratory diseases, except those relating to the tonsils. The size of the respiratory problem or the absence of any solution for it, however, is not confined to the school but is true among industrial workers and the general population.

Colds are very frequent at 6 years of age but decline to a minimum at 11 years of age or not much more than half the rate at 6 years. After 11 years, the rate rises slightly. Influenza and grippe are reported more frequently among the older than among the younger children. Tonsillitis and sore throat are relatively low at 6 years, rising to a maximum at 11 years, after which the curve declines considerably. The curve for headache is somewhat similar to the tonsillitis and sore throat curve, its peak coming at 12 years of age.

Digestive disturbances increase slightly with age, the maximum coming at about 12 years, after which there is a slight decline. Toothache rises to a maximum frequency at 9 years with a tendency toward a very slight decline thereafter.

Accidents rise to a peak at 12 years of age. Automobile and other street accidents would probably be more frequent among the younger children but the data here classified as accidents include many minor injuries such as a sore finger, hurt possibly in playing ball, and other such minor conditions.

While the relation of sickness to many physical defects was not gone into, there have been collected considerable data on sickness from certain causes in relation to the condition of the tonsils. Tonsillitis and sore throat, of course, show the largest differences in the sickness rate, the rate for the children with removed tonsils being less than half that for children with defective tonsils. Colds are also slightly more frequent among children with defective tonsils than among the other two groups.

Sickness and Absence Records in the School Health Program—Is it worth while in the promotion of the health of America's children for schools to keep sickness absence records? O. B. Nesbit, M.D., Director of Medical Inspection of the public schools of Gary, Ind., believes that keeping such records is immensely valuable. Gary has the distinction of being the only city in the United States where a health program with a full-time medical officer has been a part of the school curriculum from the very first development of the school system.

The school nurse makes out a personal history record card when a pupil enters the school, and files this for a

working record. Dr. Nesbit says: "These data are available for transfer to the health record card." The school nurse also sees and examines any pupils or school employes taken ill at school and "excuses" them if in her judgment such persons should go home.

The nurse "excludes" from school any pupil suffering from communicable diseases, vermin, parasitic skin diseases, etc., upon direction of the school physician. The nurse may readmit "head" cases, and skin troubles, at will. She readmits chicken pox, smallpox, diphtheria and scarlet fever cases only on permit from the city health department, measles after 2 weeks, and whooping cough after 4 weeks.

In the 4 years during which the school has been attempting immunization against smallpox, scarlet fever and diphtheria, 1924 to 1928, there has been a decided drop in the number of cases and also in the number of days lost.

During the past 10 years, 1,688 cases have been excluded from school. It would seem a worth while service to remove these cases from association with well children, but contact out of school was probably very little restricted except in the quarantined cases.

Result of the National Congress of Parents and Teachers 1927 Summer Round-up of Preschool Children—Discussing the Summer Round-up of preschool children, as it is being pushed by the National Congress of Parents and Teachers, Mary E. Murphy, of the Elizabeth McCormick Memorial Fund of Chicago, stated that continuous medical supervision of the child from birth to school age and the instruction of all parents in child care is the goal.

"From a group of 102 local associations in 22 states taking part in 1925, the movement has grown until, during the year 1927, 2,120 groups representing local communities in 44 states participated. Among the 448 associations which met all the requirements of the round-up there were 13,768 children examined. Among these, 17,857 defects were found of which 6,262 were corrected, or over one-third.

"Thirty associations secured the correction of more than 75 per cent of the defects discovered. Of these, 5 scored 100 per cent, while 9 passed the 90 per cent mark. Seventy-nine associations made a record of between 75 per cent and 50 per cent. Of these associations all met the requirements of a spring and fall examination and an official report to the National headquarters.

"The slogan with which the movement was launched, 'Let Parent Pride Put Parent Power to Work,' expresses tersely its real significance. It is built upon a common interest of men and women organized around the school for the benefit of the children in the school and the community. With a sense of responsibility which the home should assume as its share in the common project of home and school, the parents of the local associations have striven to send to school an entering class of children physically prepared.

"This great organization with its 20,000 units representing every economic level provides a strategic avenue of education into more than a million homes."

PUBLIC HEALTH NURSING

MIRIAM AMES, R. N.

MENTAL HYGIENE AS A PART OF PUBLIC HEALTH NURSING

The October number of *The Public Health Nurse* is devoted largely to a discussion of the meaning and place of mental hygiene in public health nursing. Several urban public health nursing associations have already incorporated mental hygiene in their programs, trying out various methods of administering this phase of their work and educating the workers.

Dr. George K. Pratt, in a leading editorial, speaks of the strategic position of the public health nurse for detection of mental and emotional difficulties in early stages. The nurse who is trained in knowledge of mental conditions acquires an "increased understanding of the true nature and sources of her personal problems. Such personal understanding is, in turn, followed by a clearer comprehension of her patient's difficulties, with a consequent increase in her efficiency as a nurse."

Mental Hygiene Commentaries

Mental hygiene is not something new and alien which is added to hygiene; it is hygiene adequately conceived. Mental nursing is merely nursing adequately conceived. . . . The physician and nurse who are in contact with the infant after the departure of the obstetrician have an opportunity not only of seeing that the child gets the right formula and puts on weight at the recognized speed, but of supervising the general training of the child with regard to the first tests of its adaptation to the new world.

In regard to many school pupils, problems will come up that are not merely pedagogic problems, and the question is whether these will be handled in a summary, disciplinary way or whether they will be studied adequately and intensively by one who has been specially prepared for this sphere of work. This latter means that the school physician and the school nurse shall have comprehensive training in the field of nervous and mental disorders and be familiar with the problems that are raised by difficulties in the instinctive and in the emotional life.

Interest in work, satisfaction from successful functioning and from due recognition, an understanding of the rôle which the individual worker plays in the general industrial machine, the absence of a feeling of injustice or grievance, these are a few of the factors which favor the mental health of the individual worker. In some plants while efficiency is assured by means of vocational tests and job specifications, by the use of production charts, by attention to problems of fatigue, and to need of change, at the same time the health and happiness are guarded by the social assimilation of the incoming worker, by definite friendly advances of chosen fellow workers, by some explanation of the rôle of the individual worker in the general industrial machine, by kindly contact with the home, if necessary, through industrial nurse or social worker. Industry, primarily interested in efficiency, may come to be one of the great cultural influences.—C. Macfie Campbell, M.D., The Prevention of Mental and Nervous Disorders, *Canada Lancet*.

The public health nurse must learn to distinguish between modifiable and unmodifiable human material. This is a distinction which doctor and nurse and social worker and teacher must learn to make, and they learn it through the painful method of trial and error in daily experience. Until we learn this lesson, we shall waste a great deal of energy and expose ourselves to ideas of inferiority and attitudes of depression. This point of view may seem heartless. Yet experience has shown that attempting to force a person to believe what he doesn't want to believe is futile. The harvest of human distress is great and the reapers are too few. As such it is an absolute necessity for us to conserve our energies for activities in which there is some opportunity for accomplishment.

You who come in contact so intimately with these gnawing problems of human lives, I would urge to work upon such common needs of mental hygiene. If in your own mind talking with a psychiatrist is synony-

mous with a charge of insanity, your clients will feel the same way. If you allow yourself to yield to the facetiousness that expresses itself in "I guess I'll go and have my head examined," you may stand in the way of someone who needs our helpfulness. The persuasion of someone to go to the right physician and talk things over is not a task, if you yourself understand the nature of the mind, and its expression in behavior. There are few of us who do not need to recover from mind shyness. The word psychology is a commonplace in our conversation, but it usually refers to the psychology of the other fellow. It is one thing to take courses of study and do reading on Instinct and Habit; it is another to recognize emotional mismanagement in ourselves that causes us to be physically ailing, or bitter and cynical, or petulant and over-critical.

From what I have seen of the nurse in training, and the nurse in public health, I believe that she is not only competent to understand and use these principles dealing with the relation of behavior to health, but I feel that her work is seriously handicapped by a lack of training in this branch of medical science. To make possible such practical experience for you who go out to bear the burden and heat of the day should be one of the greatest causes to which nursing education can direct its energy.—Esther Loring Richards, M.D., The Meaning of Individual Adaptation in the Field of Health, Shumway Memorial Lecture of the Visiting Nurse Association of Chicago.

One of the serious dangers at present is that we shall neglect all traits except intelligence, and regard a child as a tall or short intellect mounted on legs. We speak of "mental age" and "mental ability" when what we mean is intelligence age and intelligence ability. There are many kinds of mental ability, such as ability to control one's self, or to appreciate art, or learn arithmetic. Intelligence is but one of them, and by no means always the most important.

If we are going to "send the whole child to school," let us observe the whole child, even if we cannot measure each fraction of him accurately. And let us plan for the mental health of the whole personality rather than for only a portion of that personality.

Planning for mental health would also lead us to place a heavy emphasis, more than is yet common in our schools, on self-mastery, and on the acquisition of those emotional social qualities which, though of lesser value, perhaps, in dealing with the material environment, are so necessary in making human contacts.—Daniel Wolford La Rue, Mental Hygiene in Curriculum Making, *The Nation's Schools.*

Public Health Nurse, XX, 10 (Oct.), 1928.

Diphtheria is Still Declining—Since 1900, a decline in the death rate from diphtheria has been noted in the 10 states of the original registration area. The decline was rapid at first but, around 1915 and 1920, it became more gradual. In 1922, a further drop to about 8 deaths per 100,000 population occurred with such suddenness that it seemed necessary to account for it by some new factor; perhaps partly improved medical and nursing care, undoubtedly partly the use of antitoxin immediately upon diagnosis of the disease.

No corresponding drop in the number of cases of diphtheria was noted until after 1922. It was about this time that toxin-antitoxin was introduced and adopted rather generally, and there seems adequate ground for feeling that the use of this immunizing serum has materially affected the incidence of the disease.

It is somewhat disturbing to advocates of the toxin-antitoxin treatments to find that during 1927 and 1928 the number of deaths and the number of cases have both been on the increase again. There are two ways of accounting for this. Not all the susceptible individuals have been immunized in spite of the accepted effectiveness of toxin-antitoxin; so it is quite possible for the disease to develop among this untreated group. Also by study of diphtheria records for the past 30 years, it is found that the disease has occurred in waves, reaching the peak of greatest prevalence about every 7 years.

The increase of 1927 and 1928 is in direct accord with the preceding pattern of incidence. However, since it started from a much lower level, there is little

doubt that the peak will be much lower than in any preceding period.

Experience teaches us that as a disease comes under more complete control, its endemic prevalence reaches lower and lower levels and its epidemic waves grow smaller and smaller until it becomes a "rare" disease. If the battle against diphtheria is continued without faltering, by use of the weapons at our command we can confidently expect this result in the course of the next generation.—Edgar Sydenstricker, Is Diphtheria Still Declining?, *Survey*, LXI, 2: 77 (Oct. 15), 1928.

Light **Therapy**—In these days when ultra-violet light is in danger of becoming the latest fad, we are grateful for definite facts about its value and its limitations. Dr. Winthrop M. Phelps tells about the various forms of light therapy in an extremely interesting article.

"Light" itself is to be considered as "a constant stream of radiation or waves which constitute the electromagnetic spectrum." These waves vary in length from crest to crest, and the form of light produced depends on the wave length. At one extreme are the very long ones which are known to us as radio waves; the next shorter are heat waves, then the visible color rays; shorter than the color rays are the invisible ultra-violet or X-rays, and shortest of all the rays from radium.

Most light sources produce varying combinations of the visible and invisible rays, but we are conscious only of those portions which produce immediate sensory reactions, such as heat or color. Except for the radio waves, all have a certain effect upon growth and health, the ordinary light waves being so constantly a part of our environment that we are unconscious of their significance to our well-being.

The therapeutic value of the heat or infra-red rays and ultra-violet rays is the chief subject of discussion in this paper. Concentrated heat rays, by means of reflected electric light bulbs or more complicated apparatus, are used to improve circulation locally by vasodilation, to produce muscular relaxation, and to give certain analgesic effects in pain.

Ultra-violet rays are produced in connection with most visible light but, because of the fact that they do not penetrate ordinary glass, their value is lost from such sources as electric light bulbs. A quartz container will allow effective radiation of the ultra-violet rays. Although body burns due to over-exposure to ultra-violet rays are not usually serious, the sensitiveness of the eyes is so great that they should always be protected by a shield while the treatment with ultra-violet rays is being given.

The knowledge of the positive value of ultra-violet rays in specific disease conditions is at present not extensive. Rickets is unquestionably helped, and the best source of the desirable rays for treatment of rickets is a fresh mercury-vapor arc enclosed in a quartz tube.

The ultra-violet rays do not penetrate the skin deeply; so they are of little value in direct concentration over diseased areas lying in the deeper tissues. The general exposure of the body surface to the rays, however, seems to speed the recovery no matter where the underlying pathology is. Certain skin conditions are improved by ultra-violet rays, but others seem to be made worse. Ultra-violet light does have a definite effect of improving muscle tone. Most other attempts to improve diseased conditions by this means have shown no positive results.

There has been much discussion, pro and con, as to the value of ultra-violet light in the treatment of tuberculosis. It is generally accepted that the light rays as combined in sunlight are more effective in the treatment of tuberculosis than any concentrated artificial light rays. The nearest artificial approach

to whole sunlight is the "white-flame carbon arc." It requires no glass cover, but it must be produced through special heavy electric wiring in order to contain all the rays necessary. It is considered useful in institutions or offices for treatment of bone or glandular tuberculosis but impractical for use in the home. Certain disadvantageous effects of the white-flame carbon arc have been noted in cases of pulmonary tuberculosis, so that on the whole the mercury-vapor arc is at present considered a safer substitute for real sunlight for such cases.

Emphasis is placed on the need for being sure that the apparatus is actually in condition to give the desired results, whether it is a plain electric light for heat waves, mercury-vapor arc for ultra-violet light, or white-flame carbon for the whole spectrum.—William M. Phelps, M.D., Light Therapy, *Am. J. Nurs.*, XXVIII, 9: 875 (Sept.), 1928.

The Changing Status of Health Publicity—In the last thirty years the total amount of sickness and death has been decreased by one-third, due almost entirely to such specific measures as sanitation, quarantine, and immunization—the reduction occurring in such diseases as typhoid, diphtheria and smallpox. It still remains to find measures which will reduce sickness and death from cancer, heart disease, and common colds.

In very early days health regulations were considered a part of the religious code, and so were easily enforced. Quarantine and inoculation against smallpox were enforced through legal enactment. But with the beginning of the last century, and the awakening to the problem of tuberculosis, police power was found ineffective, and a health education program began to develop. It is through the education of mothers that infant mortality has been so far reduced.

However, organized education in the laws of personal hygiene must be supplemented by personal instruction of individuals and by periodic health examinations. The principal objectives of a health education campaign are summarized by Dr. Hiscock as "first, the avoidance of external conditions dangerous to life, as accidents and germ diseases; second, the development . . . of artificial immunity through . . . sera and vaccines; third, the inculcation of the principles of hygiene; fourth, the development of the conception of preventive medicine, through the employment of physicians for early diagnosis . . . and guidance in the application of laws of healthful living. . . ."

There are innumerable media of publicity by which the people can be reached—the press, radio, movies, exhibits, public addresses. The material used for such publications must be authentic, interesting, stimulating, simply expressed, and timely.

Many fields offer excellent opportunity for study and publicity of results—social hygiene, cancer, heart disease, tuberculosis, child health. Much has already been published, but there is still much left to be done in acquainting the public with methods of reducing sickness and preserving life. It has been estimated that if existing knowledge of measures for health promotion were generally applied, at least ten years could be added to the average life span. —Ira V. Hiscock, The Changing Status of Causes of Death and Sickness, from the Publicity Standpoint, *Proceedings of the National Conference of Social Work, 1928.* C. E.

EDUCATION AND PUBLICITY

EVART G. ROUTZAHN*

What Does the Public Think about It?—Syracuse is on the way to trying some form of evaluation of health education material. The discussion which follows appeared in the October–November issue of *News Bulletin* of the Committee on Publicity Methods. Since so many JOURNAL readers are interested it seems fair to reprint it in full.

We have been considering for some time, in Syracuse, the possibilities of evaluating some of our publicity and are somewhat puzzled as to just how to proceed.

Over a year ago we tried an "Ask Me Another" contest over the radio to see how valuable that avenue of health education was, finding it rather successful.

We are not so much concerned with what the public thinks of our material, as suggested on page 10 of your September *Bulletin*, as we are with the educational value of the message we give. We believe, of course, that the more attractive the method of presenting the message the better is the chance of having its contents fully absorbed by the public. To that extent we are interested in what people think about our stuff. Our proposed plan is to circularize by mail perhaps 1,000 citizens, asking certain questions on health, then tabulating their answers. After this has been done we would distribute a street car card answering the questions previously asked and about two weeks after that circularize another 1,000 persons with the same questions and compare the results of the two groups. In such an effort we would, of course, attempt to avoid all newspaper items on the subject, as well as radio talks.

Having thus possibly obtained the increased knowledge caused by the car card, we would try the same principle with newspaper articles, omitting all radio talks and posters. It is our belief that having done this by three or four methods, such as car cards, posters, radios and newspapers, we would be able to decide which offers us the best opportunity of presenting our health messages.—

James J. Stone, Onondaga Health Association.

Then a statistician comments on the above:

I am very much interested in Mr. Stone's proposal. It seems to me the project would be both useful and practicable.

There are several *variables* involved in the problem, of which the important ones are:

a—the medium

b—the quality of the material

c—the sample of persons exposed to the material

To conduct the experiment ideally, it would be necessary to vary the medium used while holding the other two variables constant, but it is obviously impossible to use the same material a second time on the same group of people. Accordingly, the sample would have to be changed, but it would be desirable to have a sample as closely similar as possible for each repetition of the experiment. The samples should be similar both with respect to the kind of people included and in respect to their preparation for the test. I wonder if, even though the attempt to avoid newspaper discussion of the experiment were successful, repetition of the experiment in the same city would not find a second sample of people somewhat affected by the first experiment.

I think the best method of making this test might be to try out each of the media considered (car cards, posters, radio and newspapers) in different but similar communities simultaneously. It would be possible to select four samples of 1,000 people in similar communities which would probably be as nearly alike as four samples selected successively in one community, and this plan would permit the use of the same material with each of the four media, or at least much more nearly the same material than would be possible if the experiment were repeated four times in the same community.

There would be considerable expense in making the experiment even once; $40 for postage, for example, in using a sample of 1,000 people, to say nothing of other expenses. The study seems to me to have possibilities

* Please address questions, samples of printed matter, criticism of anything which appears herein, etc., to Evart G. Routzahn, 130 East 22d St., New York, N. Y.

and I think it might be worth the extra expense involved in making it in four places rather than in Syracuse alone.—
Ralph G. Hurlin, Russell Sage Foundation.

We Cannot Make It Too Simple—By writing one's name and address on a slip of paper (or business card) and adding a designated number, a copy of one of a number of valuable publications will be supplied free to any one who visits Education-Publicity Headquarters at an Annual Meeting. But at Chicago 20 persons turned in slips with no number to indicate what was wanted—and the editor is not a mind reader.

Since the address slips or cards are sent to the respective publishers it is especially important that but a single number be placed on a single card. But it took more than half a day from other work to copy the addresses of people who failed to observe this request at Chicago. And neither mailing clerks nor postal clerks could read some of the addresses given.

Twice recently when we used some of this free material in meetings it was explained that always some people fail to hear the instructions—*and in both those meetings several people failed to hear what was explained in detail.* We cannot be too careful in giving instructions or information to be used by other people.

What Do You Want?—Really and truly what kind of information and other material would you like to have appear in this department? more about appeal letters and printed matter used in connection with money raising? more definite suggestions and examples in the preparation of health education folders? or are you most concerned with newspaper articles?—and so on—what do you really wish?

Are the school health workers reading this department for more references to printed matter, ideas and discussions of classroom activities?

Is there any one who makes any use of the "Titles," or "Slogans and Phrases"?

If you do not find what you most want in this department, please tell the editor, for it is quite possible your wishes can be met if they are made known.

If what does appear in the department is of little interest or use to you, please say so. It will not take many objectors to relieve the pages of the excess baggage.

But it is up to you.

In the Other Half of the World—The statement in the paragraphs below are so familiar that they are worth quoting only as an illustration of how similar the health education methods are in this distant part of the world to those here. One difference is that the English use the word propaganda to mean propaganda, while here we use it to mean bad propaganda.

Many of the leading provincial and local newspapers gave due publicity to the reports of Baby and Health Weeks Celebration held at different places. A series of four articles . . . were published in practically all the English and vernacular newspapers in July and August last. The articles sought to prove by laying emphasis with the help of statistical information on the great part played by many preventable diseases in intensifying poverty; the causes of these diseases and the methods of their prevention were then explained in brief. . . .

The proceedings of the Public Health, Maternity and Infant Welfare Conference and the Exhibition arranged by the Association in August last in Poona, India, were given wide publicity in the press. In November last a public appeal for funds was issued to the press, giving a brief interim report of the work of the association, mentioning the various ways in which the association offers material assistance in the celebration of Mofussil Baby and Health Weeks. This appeal also appeared in many provincial and local vernacular papers. Lady Cowasji Jehangir (Junior) arranged a series of six talks on Infant Welfare to be broadcast from the studio of the Indian

Broadcasting Company and Lady Cowasji herself and Dr. Tilak broadcast two talks in the series in December last.—
Report of the Bombay Presidency Baby and Health Week Association, 1927.

A Meeting That Did Not "Just Grow"—The steps taken in planning the meeting at Chicago to discuss "Steps in Planning a Year-Round Program of Health Education" illustrate the procedure followed in the careful preparation of one type of program.

Mrs. Routzahn and Dr. Galdston were a committee of two to arrange the meeting and, in consultation with other members of the Section Council, they selected topics and speakers. The participants accepted their assignments from three to five months in advance of the meeting. Each received an explanation of the purposes of the program and of his own part in it.

Abstracts or complete papers were sent to the chairman a month before the convention. These were duplicated and sent to each speaker, together with comments and suggested changes, to avoid overlapping and to fill in some of the gaps. Several papers were considerably revised as a result of this exchange between speakers. The psychologist, who was unfamiliar with the field of health education, received a collection of health booklets and folders and a brief account of the interests of the persons likely to make up the audience.

This is a simplified account of the steps taken. Some of the speakers were interviewed and numerous letters passed between the speakers and the chairmen, and much conference and correspondence preceded the selection of the speakers.

The examples of actual education-publicity programs which were discussed critically at the meeting were obtained by inviting readers of this department of the JOURNAL to submit programs which answered a list of questions about objectives, audiences, subject matter, method of approach, choice of methods and time schedule. Mimeographed copies of this request were mailed to about 100 health workers. Many of these carried a pencilled note from the chairman which probably helped in securing attention for the impersonal form letter. About 40 replies were received, including 22 programs which were used. Of these, 14 were displayed at the headquarters of the Section, and 8 were used for discussion. All of the 8 selected generously responded to a request that they supply 500 mimeographed copies. These copies were sent direct to the convention headquarters and were assembled there in sets and placed in envelopes by volunteers for distribution at Education-Publicity Headquarters and at the meetings.

Window and Other Exhibits—A memorandum on window exhibits prepared by the editor of this department applies largely to fair and exposition exhibits. Here is the memorandum as distributed by the Philadelphia Welfare Federation:

Subject matter of a window exhibit: Something that is important to tell the public *which can also be made interesting and intelligible in graphic form.*

A live or moving display must *usually* be one which can be put on all through the business day—and the evening as well.

Whatever else you do, be interesting—don't risk being dull or stupid.

The display must appeal to the "general public," not to the staff, board members or the friends of those who plan the display.

Crude or rough forms can be used only if done artistically—home made exhibits must not look "home made."

All placards should be worked out most carefully—as to wording—capitalization and punctuation—kind of letter—size and spacing of letters—color of card and lettering—position in

window and manner of display—if on floor to have stiff backing and solid easel to hold to correct angle without being leaned against something—being sure that every word can be read easily and quickly from the outer edge of sidewalk.

Be very, very sure to study windows—and your window—so that you may think in terms of actual conditions—and not merely of so many feet one way and so many another with a sheet of glass in front.

In a *good window:* simplicity; unity; unusual appearance.

In a *bad window:* small pictures; small lettering; too little space—between lines—between letters; too low.

To *dodge attention and interest:* Crowding—too many objects—too many words—too many ideas—too close together; messiness—too many different shapes—and materials and pieces; crudity—in workmanship—dolls not life-like—bad art—flimsy looking structures—looks too "home made"; tapes or ribbons—confusing and distracting; detailed maps—except on a quiet street for unhurried passerby; lists; groups of photographs.

To *get attention:* striking color; movement; large size; three dimensions; an idea related to interests of the passerby (the man on the street); an idea that can be quickly grasped; a treatment which does not seem trivial and casual; use of the human figure as well as of things.

Among the possibilities in materials and other features to use are the following:

Backgrounds—novelty papers; crepe papers; draped materials—usually plain vertical; painted background; wall paper; scenic effect—street—skyline—camp surroundings; row of large silhouetted figures; large scale outline sketches; large blackboard (extended horizontally)—may have imitation of school blackboard decorations.

Mechanical devices—automatic stereopticon; automatic picture display; continuous motion picture; open book with turning pages; moving belts; colored lights; opening and closing doors; revolving platform; moving figures.

Objects—massed quantities—as soap or bread used in one year—or figures in swimming suits to show how many have learned to swim; hand work (be sure to bring out its significance); equipment for hospital, playground, etc. (mildly interesting); models (if buildings—add cutouts of people to give life).

Dramatic forms—tableaux; marionettes or puppets; demonstrations; pantomime; interpreters—to point to objects and placards—to place placards—to write on blackboard.

Physical forms—cutout photos; cutout silhouettes; outline sketches; enlarged cartoons; *much* enlarged photographs; any of above as transparencies; heavily mounted and cutout letters; outline maps—with great discretion; picture maps—ditto; posters—more so; "little theatre" form—be sure to have action in scene staged; diagrams—rows of silhouettes—rows of objects—flashing lights—heavily mounted cutouts—strips of wood or colored paper—tall cylinders (possibly with cutout silhouettes or photographs on the front).

Helps and helpers: Make a "census of useful people"; get an artist as adviser on color and general effect; a good amateur photographer may work out silhouettes; a manual training teacher may handle cutouts; an official in a factory may get interested in working out a moving device and may provide motor for same; groups of women may cut out pictures not mounted on wood.

LAW AND LEGISLATION

JAMES A. TOBEY, LL. B., DR. P. H.

Pass the Parker Bill—A vigorous resolution urging Congress to pass the Parker Bill for federal health coördination over the veto of the President was adopted by the Association at its 57th Annual Meeting in Chicago in October, 1928. The second session of the Seventieth Congress convenes December 3, 1928, and will adjourn March 3, 1929. The time for action is short, but there is time enough for this desirable procedure.

The principles of the Parker Bill have been indorsed by the American Public Health Association every year since 1925, and Congress finally adopted the measure, somewhat amended, in May, 1928. Apparently due to the influence of General H. M. Lord, Director of the Budget, President Coolidge vetoed the bill on May 18, giving as reasons the fact that one section was considered unconstitutional and that the bill tended to "militarize" the U. S. Public Health Service.

The palpable fallacies of these arguments have already been discussed in this department. Though the Parker Bill by the amendments lost a certain effectiveness, it is still a very important measure, especially in its provisions for allowing the detail of U. S. Public Health Service personnel to other government bureaus; in granting a commissioned status to sanitary engineers and other scientific personnel of the service; in providing for a Nurse Corps; and in setting up a national advisory health council.

Sanitarians are still interested in this excellent measure and keenly desirous that it be passed now. If it is not, the bill must be reintroduced and passed all over again in the next Congress. It would be helpful if sanitarians would communicate with their United States Senators and Representatives regarding this important matter. Do it now.

Traveling Expenses and Income Taxes—At last the somewhat muddled matter of travel expenses and federal income taxes of physicians seems to be getting more or less settled. On October 2, 1928, the U. S. Board of Tax Appeals ruled in Jack v. Commissioner of Internal Revenue that the amounts expended by a physician for railroad fare, hotel accommodations and meals in connection with attending meetings and conventions of various medical associations could be deducted as ordinary and necessary expenses in computing income tax returns.

This decision does not become final until 6 months after its promulgation, during which time the Commissioner may appeal to the courts if he so desires. It is to be hoped that he will not, for this decision and a previous one, A. Silverman, 6 B.T.A. 1528, in which a chemist was allowed to deduct traveling expenses in attending a professional society meeting, would seem to be sufficient precedent for authorizing members of the American Public Health Association who pay their own expenses to professional meetings to deduct such expenses in figuring their income taxes, if they are affluent enough to have any.

Applications for refunds for previous years, a separate application for each year, may be filed now with the Commissioner of Internal Revenue, using *Form 843*, and showing thereon that the application is based on Jack v. Commis-

sioner of Internal Revenue, Docket Nos. 14995 and 17662. The *Journal of the American Medical Association* in an editorial on this matter in its issue of October 27, 1928, estimates that the medical profession has paid as much as half a million dollars into the federal treasury for these taxes since 1922, when the Commissioner first denied the deductions. This *Journal* is, as usual, somewhat sarcastic about it, and properly so in this case.

More Liability for Typhoid—Still another court decision sustaining an award of damages for typhoid fever caused by impure water has joined the number of cases which have been discussed recently in this department. Municipal and private corporations ought by now to be cognizant of the fact that it does not pay to be careless in supplying water to the people. Water companies seem to be paying dearly for the knowledge that they owe a duty to the public to exercise reasonable care to see that water furnished for human consumption is pure, potable, and free from contamination.

The latest decision comes from California and represents an opinion in 19 cases brought against a city for deaths and illnesses due to a polluted municipal water supply, Ritterbusch v. City of Pittsburg, 269 Pac. 930. The facts were that a chlorination plant used to treat the city water became inoperative for 12 hours in June, 1920, and unchlorinated water was supplied to the city. The result was an epidemic of typhoid and dysentery.

The California Supreme Court upheld judgments against the city awarded by lower courts on the ground that the evidence was sufficiently conclusive to show that the epidemic was due to the negligence of the city in failing to treat the water properly. Once more public health is advanced by the courts. Other court decisions on this same subject have been collected and discussed by the Associate Editor, who will send a reprint on the subject to anyone who wants it.

A Bibliography of Public Health Law

For the benefit of sanitarians there is presented herewith a list of references to the more important articles, bulletins, and books on various phases of public health law which have appeared during the past 2 years. All significant material which was published prior to that time is cited in the book *Public Health Law*.

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Tobey, J. A. Liability for Water-Borne Typhoid, *Pub. Works*, Apr., 1928.

VACCINATION

Fowler, W. Smallpox Vaccination Laws, Regulations and Court Decisions, *Supplement No. 60*, 1927, U. S. P. H. S.

VITAL STATISTICS

Fales, W. T., Kopf, E. W., and Tobey, J. A. Constitutional, Statutory, and Administrative Aspects of Vital Statistics, *A. J. P. H.*, Aug., 1927.

We Bow Ourselves Out—With this issue the writer has completed 9 years' service as editorial assistant and associate editor of the AMERICAN JOURNAL OF PUBLIC HEALTH. His tenure of office has been longer than that of any other member of the present Editorial Board, except Dr. E. R. Hayhurst.

Due to increasing demands on his time, lack of sympathy with the policies of the present chairman of the Editorial Board, and other reasons, the writer regrets to state that he considers it desirable to relinquish the pleasant, if somewhat arduous, duty of conducting this monthly department on Law and Legislation.

Although the JOURNAL carried an anonymously conducted section on "Legal Decisions" in 1916, the first systematic attempt to present reports on public health legislation was inaugurated in 1920, when the writer's material assembled for the National Health Council was incorporated regularly in the JOURNAL. In March, 1923, this legislative material was placed in a separate department, which has been continued up to now, though with increasing and broadening scope. In recognition of this advance, the name of the department was changed to Law and Legislation in 1925.

During his 9 years of service the writer has contributed about 250,000 words to the JOURNAL, chiefly in his own department, though occasionally in news items and editorials.

That the material on Law and Legislation has been profitable not only to the writer but also to the readers seems indicated by the numerous communications which have been received commenting on various items or requesting information on legal topics. Only once during the entire period has anyone taken issue with anything that has been said in this department, though no doubt there have been plenty of provocative statements, all of which, however, the writer has been willing and able to support.

The legal side of public health is one of the most important subjects which confront the health official. For his own protection, as well as for his efficiency as an administrator, he should have an adequate working knowledge of public health law. It has been the writer's privilege to contribute something to that knowledge in the past through this department and in other ways, and he expects to continue his interest in that subject.

BOOKS AND REPORTS

A Short History of Medicine, *Introducing Medical Principles to Students and Non-Medical Readers—By Charles Singer, M.D., D.Litt. Oxford. New York: Oxford University Press,* 1928. 368 pp. Price, $3.00.

The name of the author and the press from which this book comes are sufficient to assure one of its quality. Examination of the contents further convinces the critic that his confidence has not been misplaced.

Dr. Singer assumes that medical science has now reached such a stage that some knowledge of it is demanded of all educated men and women whether or not they have had medical training. He supports the historical method of teaching.

The outstanding aim of the work is to lay stress on the principles of medicine rather than the details of practice; to treat medicine as a science rather than to give the histories of individuals, though this feature has not been neglected. The term "philosophy" is frequently substituted for "principles," and this term is explained in the preface as standing for the "disinterested study of the theory of the subject, without reference to its application to particular instances."

Beginning with an illuminating picture of Greek medicine, in which our debt to those early times is shown, we are carried as rapidly as possible through the schools described as "The Heirs of Greece," those of the Middle Ages down to modern medicine, to which more than half of the book is devoted, the writer presenting it "as a natural outgrowth of an ancient tradition."

The author dates the beginning of modern medicine, which he calls the "Period of Scientific Subdivision," at about 1825. After a brief discussion of the causes for this scientific specialization, he begins with the study of preventive medicine in England and in this country, and in sequence considers those lines of thought which have brought medicine to its present state. We find the history of the cellular theory of pathology, the germ theory of disease, anesthesia, advances in surgery, bacteriology as a special science, immunity, psychology, nursing, physiology, and studies of the special senses discussed.

In view of the author's object—to teach students and non-medical persons the history of the science of medicine—he has given his account in language as simple as possible so as to make the smallest demand upon the scientific equipment of his readers. He has, however, avoided the very common mistake made by writers of more or less popular books of taking as his target the mental age of about ten.

It is unusual to find a book designed for such a wide range of readers so well balanced. Not only can the historian, but the average medical man, as well as the layman, find here the knowledge which he seeks, presented in clear language and orderly sequence.

The book closes with an epilogue which is somewhat philosophical in character, though its application is practical. The debt which medicine owes to the various sciences is emphasized, and we are urged to encourage the study of science as a whole, or of learning as a whole, rather than to make a "direct attack" on medicine, which has been one of the mistakes of the past. It is pointed out that medicine "cannot give immortality, but it should enable us

all to live out our full lives. Death, coming in due and not undue time, is shorn of all his terrors, when every man and every woman

Shall come to his grave in a full age,
Like as a shock of corn cometh in, in his season."

The printing and make-up of the book are excellent, and there are many unusually good illustrations.

M. P. RAVENEL

The Glands Regulating Personality —*By Louis Berman, M.D.* (*2d. ed. rev.*) *New York: Macmillan,* 1928. 341 pp. Price, $3.50.

There is no doubt that one of the most interesting as well as important problems before the physiologist and practitioner is that of the secretions of the ductless glands and their effect upon the body and its functions.

The author of the present book conceives that every person is dominated by his internal secretions, and he uses the terms "pituito-centric," "thymo-centric," "gonado-centric," "pituito-adrenal," etc., to designate persons who are chiefly influenced by one gland or combination of glands, giving descriptions of the types which may be expected from the action of one gland or the other. In order to prove his case, he analyzes the characters of a number of historic personages such as Napoleon, Nietzsche, Darwin, Caesar, Oscar Wilde and others, whose peculiarities as well as genius are attributed to the particular internal secretions which dominated them. Finally, there are chapters on Applications and Possibilities, and Evolution, in which he goes so far as to indicate that endocrine hygiene may control crime and improve the race, since "A man's chief gift to his children is his internal secretion composition."

The author is evidently widely read, and he interweaves facts with his fantastic theories so skilfully as almost to deceive the elect. This book may serve to amuse those who are well posted on the subject of endocrinology. We believe it to be distinctly dangerous and misleading to anyone who has not a sound fundamental education. As an example, we know that the first edition was ordered by the School of Education of a certain university—not by those in the Medical School, who would not have been misled.

Needless to say it contains a great deal that is true; but this is so interwoven with theory and imagination that one must sound a note of warning concerning its fallacies. M. P. RAVENEL

Nurses, Patients and Pocketbooks—A report of the Committee on the Grading of Nursing Schools—*By May Ayres Burgess. New York: Committee on the Grading of Nursing Schools,* 1928. 618 pp. Price, $2.00.

This valuable study presents the results of a comprehensive survey of the nursing profession. The first part presents the facts brought out by the research, while the second discusses their implications. Some of the chapter headings, indicating the general nature of the facts gathered, are:

Is there unemployment now?
What registrars say.
Is there a public health nurse shortage?
Are physicians satisfied?
Are patients satisfied?
How do nurses like their jobs?

Perhaps the outstanding conclusion of the committee relates to the supply of nurses, for statistics indicate that there is a decided over-production. If present trends continue, this over-production will produce a serious situation. Other general facts ascertained are: there is no dearth of applicants for public health nursing positions, but there are not sufficient applications by well-qualified candidates; physicians prefer registered to practical nurses, but cannot always get the type of nurse desired for unpopular varieties of cases; the incomes of most private duty nurses are

low, half earning $1,297 or less a year; the competition of "practicals" seriously affects the incomes of R.N.'s; the quality of many R.N.'s is distinctly below that required by physicians and the public; practical nurses seem as popular with patients as R.N.'s, but this is not the case with physicians.

The report indicates a most unsatisfactory state of affairs among nurses, especially those not in institutional or public health work. Of those in private duty, 55 per cent plan to remain in the field, while among public health and institutional nurses the corresponding figures are 86 per cent and 82 per cent. Part of this discontent arises from the long hours in private duty. Over 56 per cent of home nursing days are on the 24-hour basis, while in hospital service the corresponding figure is only 12 per cent. The pay is low, does not vary with ability and experience, and there is no future to private nursing. The typical private duty nurse gives about 1 month out of 12 to free service.

In its discussion of the implications of the facts ascertained the committee makes several useful suggestions, while at some places it admits it has no immediate solution to offer.

The investigation has been thorough, the conclusions being based upon 34,000 returns from nurses, 28,000 from physicians, 3,400 from hospitals, and 3,200 from patients, registrars, etc. The book is easy to read and easier to remember because of the summary at the end of each chapter. The liberal use of good diagrams also aids the presentation. The practice of giving excerpts from letters of physicians, nurses and patients has helped in giving an adequate picture of the situation, as well as making the volume more readable.

This committee is composed of 21 members representing nurses, doctors and the public, and is sponsored by the American Medical Association, the American College of Surgeons, the American Hospital Association, the American Nurses' Association, the National League of Nursing Education, the National Organization for Public Health Nursing, and the American Public Health Association. Its ultimate purpose is "the study of ways and means for insuring an ample supply of nursing service, of whatever type and quality is needed for adequate care of the patient, at a price within his reach." To accomplish this, a 5-year program of research has been outlined of which this volume covers the first project. The other two studies, which will be looked forward to with undoubted interest because of the high quality of this first report, will be "What nurses need to know and how they may be taught" and "The grading of schools of nursing."

ALLAN PEEBLES

A Manual of Tuberculosis Legislation—*By James A. Tobey, LL.B., Dr.P.H. New York: National Tuberculosis Association,* 1928. 86 pp. Price, $.50.

This manual is the eighth of a series of technical publications issued by the National Tuberculosis Association.

In Part I of the manual, the underlying principles of tuberculosis legislation are discussed. This is followed by an outline for a state legislative program against tuberculosis, with practical hints on law making. Part II consists essentially of an analysis of existing state and county tuberculosis legislation, arranged according to subject matter. It includes a consideration of general public health administration, reporting and legislation, control of cases and contact, establishment and maintenance of sanatoria, and miscellaneous measures. Part III supplies an index to tuberculosis legislation by states, arranged in alphabetical order, and a chronology of important legislation from 1893, when Michigan required reporting by a regu-

lation of the State Board of Health, to 1909, when New York and Ohio each passed county sanatorium laws, the first in the United States.

The information is complete but concise, and so well arranged that the book serves as a ready reference on any topic concerning tuberculosis control by legal or legislative means.

H. E. KLEINSCHMIDT

Directory of Psychiatric Clinics for Children in the United States. *New York: Commonwealth Fund Division of Publications.* 187 pp. Price, $.75.

This Directory presents the results of a recent survey of clinical facilities for child guidance throughout the United States, made by the Division on Community Clinics of the National Committee for Mental Hygiene. Under each state is given a list of local clinics providing regular service for the study and treatment of conduct problems, the number of children handled in each clinic during the past year, and a description of the institutions and community resources in mental hygiene under state governmental auspices, as well as the names, addresses, and chief activities of state and local mental hygiene societies.

How You Can Keep Happy—By *William S. Sadler, M.D., F.A.C.S. Chicago: American Health Book Concern,* 1926. 292 pp. Price, $3.00.

The basis of this book is the conviction, which the author seems to claim as his own, that happiness in living is largely a question of emotional control. If we succeed in having certain emotions and sentiments dominate us, our life is joyful, while, on the other hand, allowing our more primitive and less desirable emotions to control us brings sorrow, fear and unhappiness. The most interesting part of the book is Part IV dealing with the methods of emotional control.

There is nothing new in the book, but the material is interestingly presented, and will doubtless be of aid to certain types of people who have not cultivated self-control and to those who desire to do so. M. P. RAVENEL

Recent Advances in Chemistry in Relation to Medical Practice—*By W. McKim Marriott. St. Louis: Mosby,* 1928. 141 pp. Price, $2.50.

This small volume is a reprint of the six lectures given by the author at the San Diego Academy of Medicine in 1926. The lectures were given to show the application of some of the fundamental principles of chemistry to the practice of medicine and its extensive development in recent years.

In the first chapter of the book, brief discussions are given of such fundamentals as the structure of atoms and molecules, ionization, hydrogen ions and their values, surface tension, osmotic pressure and colloids. In the remaining chapters these principles are applied to acidosis and alkalosis, the chemistry of the blood, foods and metabolism and the endocrines and their clinical application.

This little book will be especially valuable to medical graduates of a few years ago by whom recent chemical literature may not be easily understood.

A. B. HAW

HEALTH DEPARTMENT AND OTHER REPORTS

IRA V. HISCOCK

Providence, R. I.—The forty-fifth annual report of Providence for 1927 records a population of 272,400, a birth rate of 11.6, and a marriage rate of 16.3 per 1,000 population. As in previous years, a classified financial statement compares the expenditures in 1926 with those in 1927, the latter amounting to $205,182 ($127,158 garbage removal contract). An appraisal of all health activities in the city, on the A. P. H. A. Appraisal Form, gives a rating of 851.6 as compared with 816.8 for 1926. The principal increases are noted under activities of child hygiene, including prenatal, preschool, and school, and under communicable disease control, especially immunization.

The first step in the supervision of the health of infants is the distribution of prenatal letters to prospective mothers each month. In 1927 there were 1,068 requests for such letters as compared with 897 in 1926. Five nurses supervise, until they are 3 years old, the children delivered by midwives (10.8 per cent of total live births), making each well baby ten calls before it is 1 year of age, and as many other calls as are necessary if the child becomes sick. One nurse supervises the infants and young children in licensed boarding homes, and the infants of such unmarried mothers as are not under the supervision of private agencies. One nurse from the department makes one visit upon each infant delivered by a physician, provided the mother is not on the maternity service of the Providence District Nursing Association or delivered at the Lying-in Hospital. An infant mortality rate of 63 for 1927 is recorded.

Three important changes were made during the year in the methods of garbage collection and disposal: (1) transfer of the control and management from the health department to the Commissioner of Public Works; (2) arrangement for collection and disposal by the municipality rather than by contract; and (3) adoption of incineration rather than feeding to swine. "In Providence, as in all other cities in former years, garbage disposal was considered an important health problem, and although it is now known to have practically nothing to do with health, the force of tradition has kept it in this department."

Worcester, Mass.—The 1927 Massachusetts legislature passed an act establishing a standard for ice cream and regulating its manufacture and sale. "All such places (in Worcester), when it was proposed to manufacture ice cream, have thus far been thoroughly inspected by the entire board." New regulations were adopted during the year concerning the handling of milk, pasteurization, and the care of plants and utensils.

A birth rate of 23.3, a general death rate of 13.1, and an infant mortality rate of 57 are reported for 1927. Several good statistical charts are features of the report.

New Britain, Conn.—The annual report for the year ending March 31, 1928, opens with a concise statement of the different functions of the department. An annual expenditure of 79½ cents per capita is noted for this city of about 70,000. An infant mortality rate of 71.2 is recorded, with a general death rate of 8.2. There were 32 diphtheria cases reported with 1 death, and 102 tuberculosis cases reported with 40 deaths. It is reported that this city, together with several surrounding towns,

is on the state and federal accredited list, " which means that all bovine animals within those areas are regularly tuberculin tested at state expense."

Illinois—The annual report for the year ending June 30, 1927, describes the work of the department of public health for the 50th year since the law creating the first state health service in Illinois became effective. A history has been prepared which covers this 50-year period. It is stated that the most noticeable change in conditions is the fact that whereas the summer season was formerly more unhealthful, as indicated by mortality statistics, now the winter and spring months are less favorable. Sickness and mortality now fall to a minimum during August and September, whereas February, March, and April make up the quarter when illness and mortality reach maximum levels. Decreases in diseases such as typhoid, malaria, dysentery and diarrhea, are largely responsible for this change. In 1926, typhoid and diphtheria prevalence reached the lowest points recorded in the history of the state.

This report contains accounts of divisional activities, with several good charts and excellent photographs. In the child hygiene and public health nursing section, it is learned that the department of public health and child welfare of the Illinois Federation of Women's Clubs decided to sponsor a preschool child health program for a period of 5 years. Each club woman agreed to be responsible for the examination of one child each year, this being done by the family physician and family dentist in their own offices. The program was outlined and standardized by a committee made up of representatives of the state medical and dental societies, the Federation of Women's Clubs, and the Division of Child Hygiene of the state. During the year, a preschool examination card was prepared, and more than 40,000 of them were requested for use by various groups, while members of the division assisted with the examination of more than 7,000 preschool children.

In coöperation with a plan accepted by the presidents of the five state teachers colleges for a course in health education for students in teacher training institutions, and in order to impress the prospective teacher with the value of a complete physical examination as the basis for health education, to collect information regarding health conditions of the future teachers, the State Department of Public Health offered the services of a physician (coöperating with the local medical and dental profession) as a demonstration measure. Over 1,400 students were subsequently given physical examinations at three of the five state teachers colleges.

White Plains, N. Y.—Printed in good readable type, on soft paper, with excellent statistical tables and graphs and a few photographs, the 1927 health department report of White Plains is a credit to this city of 29,888 people. Scored on the Appraisal Form of the A. P. H. A. by the health officer, a rating of 865 out of a possible 1,000 points is obtained. This rating includes the health practices of all agencies participating in the community health program. A birth rate of 20.8, a general death rate of 9.6, and an infant mortality rate of 49 are recorded.

Increased laboratory examinations are noted during the year. These include Wassermann tests, Widal tests, and examinations of water, milk, and ice cream, as well as of other routine specimens. The work in child hygiene and tuberculosis clinics has expanded, weekly clinics having been held under the direction of a local physician. Department nurses made 2,977 home visits for the purpose of seeing babies and prenatal cases, of following up cases of

tuberculosis and venereal diseases and of interesting patients in regular attendance. Little Mothers' Leagues and Junior Health Leagues have been organized in schools.

Expenditures for health work by the Department of Education amounted to 56 cents per capita, by the Nursing Association to 84 cents per capita, while the amount spent for the care of cases of contagious disease, acute venereal disease, tuberculosis and psychopathic cases was $1.76 per capita. "If the amounts spent by the various organizations mentioned above are added to the amount of the health department budget, the total amount spent for health activities in White Plains during 1927 was $4.11 per capita."

Baltimore, Md.—Baltimore had an estimated population in 1927 of 819,012, of whom 121,296 were colored. Birth rates of 18.5 for the white population and 27.7 for the colored population, with death rates of 12.3 and 24.4 respectively, were recorded. Detailed statistical tables in the last report include data regarding population and deaths beginning with 1875. For the current year, deaths are analyzed by age, sex, month and cause, while births are classified by nativity. The infant mortality rate of 81.6, 69.9 for whites and 127.0 for colored persons, is lower than for previous years.

Tables are presented to show that 58,323 children have been immunized by toxin-antitoxin, 1922–1927, of whom 16,430 were pupils entering school, and 9,173 were preschool children. Other data include a compilation of questionnaires sent to physicians who used scarlet fever serum, the general tone of the responses being favorable as regards treatment results.

Regulations governing the manufacture of ice cream require that cream be produced from milk which is of the same grade and quality as that milk which is used in the regular bottle trade. In the milk division, also, measures were enforced for proper cleansing of milk bottles, followed by steaming or chlorination.

This report of 256 pages contains a table of contents at the front, and an alphabetical index at the back. A classified financial statement shows expenditures amounting to $790,434 during 1927. The report is printed in good readable type, and is bound in attractive soft blue paper covers, with a well-arranged title page.

East Orange, N. J.—During 1927, 74 per cent of the 1,308 births in this city of 66,640 population occurred in hospitals, while 32 per cent of the 658 deaths occurred in hospitals. Births and deaths are analyzed by wards and nationality, and the latter are also classified by cause in accordance with the International List. The fly leaf of the report carries a diagrammatic sketch of the comparative ratings of the city activities based on the Appraisal Form, 836 having been obtained in 1925 and 900 in 1927. The last three pages of the report are devoted to a statement of the finance committee, which includes a detailed classification of expenditures. The appropriation for 1927 was $43,836.

Fully 80 per cent of the school children have been protected against diphtheria and an increasing number of preschool children are being so protected by the family physician. There were 42 cases of diphtheria with no deaths, 33 of the cases occurring in children under 10 years of age who had not been immunized. During the year, 186 persons were bitten by vicious dogs, and 7 dogs were found to have rabies. The Board of Health has recommended that a city ordinance be passed requiring vaccination against rabies as a prerequisite to licensing of dogs, but no action along this line has resulted.

The report is written in accordance with the outline of the Appraisal Form and contains an immense amount of interesting data for health officers of cities of this size. There are many good statistical tables and graphs with appropriate descriptive text.

Scotland—The population of Scotland in 1927 was 4,894,700, and the general death rate was 13.5 per 1,000, while the death rate from tuberculosis was 99 per 100,000, and the infant mortality rate was 99 per 1,000 births. Since 1890, local authorities have had power to provide houses for the working classes, although this was little used until 1919. During 1927, the total number of working class houses erected was 21,660. As it is estimated that 10,000 are required annually to meet normal requirements, there is now believed to be a substantial number of houses to set against the great shortage, estimated by the Royal Commission in 1917 to amount to 121,430 houses.

Another feature of the year, according to the ninth annual report of the Scottish Board of Health, was the launching of a scheme of contributory old age pensions, which, together with contributory pensions for widows and orphans initiated in 1926, completed the system of contributory pensions—now reaching more than 150,000 persons.

There were two major outbreaks of infection during the year, one a widespread epidemic of influenza, and the other of smallpox. The latter disease, involving 155 cases, was of a mild type, resembling the type found in recent years in England. The principal causes of death in order of magnitude during the year were as follows: heart disease, "malignant disease," apoplexy, pneumonia, bronchitis, diseases of early infancy, tuberculosis, influenza, nephritis and diarrhea and enteritis.

BOOKS RECEIVED

THE PICKETT-THOMSON RESEARCH LABORATORY. Vol. IV, Part 1. The Pathogenic Streptococci. London: The Pickett-Thomson Research Laboratory, 1928. 250 pp. Price, $10.00.

HUNGER FIGHTERS. By Paul de Kruif. New York: Harcourt, Brace, 1928. 377 pp. Price, $3.00.

MARRIAGE STATISTICS. New York State (Exclusive of New York City), 1921–1924, with Introductory Analysis of Marriage Statistics, 1916–1924. By J. V. DePorte, Ph.D. Albany: New York State Department of Health, 1928. 257 pp.

CHEMISTRY IN MEDICINE. Edited by Julius Stieglitz. New York: Chemical Foundation, 1928. 757 pp. Price, $2.00.

PRINCIPLES OF SOCIOLOGY. By Rudolph M. Binder, Ph.D. New York: Prentice-Hall, 1928. 609 pp. Price, $5.00.

SPASMOPHILIA. By Edward C. Wrightsman, M.D. Boston: Gorham Press, 1928. 155 pp. Price, $2.00.

THE RISE AND FALL OF DISEASE IN ILLINOIS. Vol. II. Isaac D. Rawlings, M.D. Springfield: State Department of Health, 1927. 493 pp.

HEALTH READERS: Book Three. The Road of Health to Grown-up Town. By Lummis & Schawe. New York: World Book Co., 1928. 152 pp. Price, $.76.

THE BASIS OF BREEDING. By Leon F. Whitney. New Haven: Fowler, 1928. 260 pp. Price, $3.00.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

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AKIN, C. V. Fumigation with Cyanogen Products. Pub. H. Rep., 43, 41: 2647 (Oct. 12), 1928.

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ALBUS, W. R. Some Observations on the Plate-Count Method of Enumerating Bacteria in Milk. J. Bact., 16, 4: 269 (Oct.), 1928.

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BOWES, G. K. The Bacterial Examination of Water in Public Swimming Baths. J. State Med., 34, 9: 521 (Sept.), 1928.

Value of Health Examinations—The author presents a distorted picture of the periodic health examination and its result upon one unbalanced patient. He concludes by devious reasoning that the evidence for the health audit "has the same general character as that submitted to Ponce de Leon." The paper is typical of the magazine in which it appears and the harm that it will do is therefore problematic.

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Influences in Life Conservation—Both the practicing physician and the sanitarian have indispensable parts in saving lives; the interrelationships and mutual dependence, one on the other, are arrestingly presented.

CALVER, H. N. Retail or Wholesale Life Saving: Which Pays Best? J. A. M. A., 91, 17: 1284 (Oct. 27), 1928.

Recording Children's Development—A description of a method of photographing the front and lateral views of children for a stereoscopic record, affording an excellent means of visual comparison.

CLOUGH, H. D., and MURLIN, H. D. Permanent Records of Growth and Nutrition of Children. Am. J. Dis. Child., 36, 3: 425 (Sept.), 1928.

The Tuberculosis Problem—A British symposium on tuberculosis preventive measures emphasizing the failures as well as the successes of the antituberculosis movement.

COUTTS, F. J. H., *et al.* The Present Position of the Tuberculosis Problem. J. Roy. San. Inst., 49, 3: 65 (Sept.), 1928.

Deafened Children—A second report on tests of children's hearing by means of an audiometer. Annual tests of the school child's hearing are again urged.

FOWLER, E. P., and FLETCHER, H. Three Million Deafened School Children. J. A. M. A., 91, 16: 1181 (Oct. 20), 1928.

Infant Diet Self-Selection—A very interesting record of allowing the self-selection of a wide variety of foodstuffs by newly weaned infants. Should be read by all who are concerned with the care of infants; so interestingly told that all will enjoy reading it.

DAVIS, C. M. Self-Selection of Diet by Newly Weaned Infants. Am. J. Dis. Child., 36, 4: 653 (Oct.), 1928.

Tularemia—A timely paper on the symptoms, diagnosis, pathology and prevention of tularemia. The wearing of rubber gloves by those who hunt or cook rabbits occasionally is sufficient, but for others who handle rabbits frequently some protective treatment is needed.

FRANCIS, E. Symptoms, Diagnosis and Pathology of Tularemia. J. A. M. A., 91, 16: 1155 (Oct. 20), 1928.

Health Education Values—Arguments are presented to indicate the place of popular health instruction in furthering public health consciousness, the prevention of disease, and the promotion of effective therapeutics.

GALDSTON, I. Tuberculosis Prevention and Health Education. Am. Rev. Tuberc., 18, 8: 264 (Sept.), 1928.

Eskimos' Susceptibility to Colds—Whenever an outsider visits an Eskimo colony, even though he is without symptoms, an epidemic of colds is started. Adult Eskimos are invariably Schick negative though the disease is unknown and the children are usually Schick positive. All are Dick negative.

HEINBECKER, P., and IRVINE-JONES, E. I. M. Susceptibility of Eskimos to the Common Cold and a Study of their Natural Immunity to Diphtheria, Scarlet Fever and Bacterial Filtrates. J. Immunol., 15, 5: 395 (Sept.), 1928.

Infant Mortality—Respiratory infections, not gastrointestinal, are the commonest causes of infant mortality and are not controlled effectively. The limitations of prenatal care in controlling neonatal mortality are considered.

HERMAN, C. Some Factors in the Infant Mortality Problem. New York State J. M., 28, 18: 1087 (Sept. 1), 1928.

Diphtheria Immunization Campaign—This is the story of the effort to induce the mothers of Schenectady to have their preschool children immunized by the family physician. A valuable record.

GILMARTIN, H. A. The Medical Society's Share in Protecting the Children of Schenectady against Diphtheria. N. Y. State J. M., 28, 18: 1097 (Sept. 1), 1928.

British Milk Supplies—The condition of the milk supply of Leeds, England, the lack of effective control and the absence of pasteurization, will afford an interesting comparison with conditions in comparable American communities.

JERVIS, J. J. The Milk Supply of Leeds. Med. Off., 40, 14: 147 (Oct. 6), 1928.

Measles Prevention—An historical and critical review of the bacteriological and immunological researches into the prophylaxis and therapeutics of measles.

KATO, K. The Bacteriology and Sero-therapy of Measles. Am. J. Dis. Child., 36, 3: 526 (Sept.), 1928.

Acidophilus Products—Of 8 commercial acidophilus products only 5 bore any information on the label as to number of viable organisms per unit; of these only 3 fulfilled the claims.

KOPELOFF, N., *et al.* Commercial Acidophilus Products. J. A. M. A., 91, 16: 1187 (Oct. 20), 1928.

Milk and Leafy Vegetables—A chapter from McCollum emphasizing the value of milk and leafy vegetables as foodstuffs supplemental to meat and cereals.

MCCOLLUM, E. V. Importance of Milk in the Human Dietary. Certified Milk, 3, 29: 3 (Sept.), 1928.

Mussel Poisoning—An account of an epidemic of food poisoning caused by mussels taken from the waters adjacent to San Francisco.

MEYER, K. F., *et al.* Mussel Poisoning. J. Prev. Med., 2, 5: 365 (Sept.), 1928.

Immunization with Anatoxin—A report of successful experience in immunizing against diphtheria with anatoxin (toxin treated with formalin) in France. Its use is advocated because of the high incidence of immunity produced, because its use is freer from accidents, and it cannot sensitize the patient to serum.

RAMON, G., AND HELIE, G. I. Diphtheria Prophylaxis in France. J. A. M. A., 91, 14: 1028 (Oct. 6), 1928.

Antigenic Properties of Ultraviruses—Herpes-encephalitis virus, like vaccinia and rabies, produces no complement fixing or precipitating antibodies, but does produce virulicidal antibodies.

SCHULTZ, E. W., and HOYT, J. Studies on the Antigenic Properties of the Ultraviruses. J. Immunol., 15, 5: 411 (Sept.), 1928.

Decline of Communicable Diseases—A broadly philosophic discussion of the individual environmental and social factors which tend to limit the spread of infections. The importance of animal reservoirs for the spread of disease to humans is discussed, as is the lack of knowledge of the natural history of diseases. A very important paper.

SMITH, THEOBALD. The Decline of Infectious Diseases in Its Relation to Modern Medicine. J. Prev. Med., 2, 5: 345 (Sept.), 1928.

Epidemiologic Principles—A rather ponderous presentation of the more obvious principles of epidemiology, which the author states cannot be found in any one book. We suppose he refers to books in Great Britain, for the principles are set forth in the standard American textbooks.

STALLYBRASS, C. O. The Principles of Epidemiology. J. State Med., 34, 9: 510 (Sept.), 1928.

Health of Negro Children—A detailed biometric study of 5,000 negro school children in Atlanta in which the heights and weights of both sexes are recorded, and other important information such as the incidence of defects. A useful document.

STERLING, E. B. Health Studies of Negro Children. Pub. Health Rep., 43, 42: 2713 (Oct. 19), 1928.

Supplying Human Milk—An account of the way human milk is collected, tested, bottled, pasteurized and distributed to needy children.

TALBOT, F. B. An Organization for Supplying Human Milk. New England J. Med., 199, 13: 610 (Sept. 27), 1928.

Prophylactic Measures—This is a very valuable and inclusive summary of the prophylactic and treatment agents for twenty communicable diseases.

WHITE, B. Serums and Vaccines in the Prevention and Treatment of Infectious Diseases. A Critical Review. New England J. Med., 199, 11: 505 (Sept. 13), 1928.

Preventive Medicine—Public and Private—A very frank discussion which faces courageously the vexing questions which inevitably arise between the private practitioner and the extension of the non-official and official health programs.

WILLIAMS, L. R. Present Status of the Practice of Medicine. New York State J. Med., 28, 17: 1027 (Sept. 1), 1928.

NEWS FROM THE FIELD

PUBLIC HEALTH IN EUROPE

A SURVEY of the development of public health programs in foreign countries has recently been given by J. H. Mason Knox, Jr., M.D., Chief of the Bureau of Child Hygiene, Maryland State Department of Health. Dr. Knox attended the International Congress for the Protection of Infancy in Paris in July. He states:

One of the most noticeable changes is the increase in public health nurses, for during the war this activity was almost unknown. Now there are 1,500 full-time public health nurses in France. Their training for the most part has been based on the training given to nurses in this country. There has also been an increase in full-time health service in France; out of 89 departments there are 52 having full-time health officers. France has organized a rather extensive child health program and appropriations have been made by the government to many private agencies such as maternity homes, day nurseries, vacation colonies and preventoria for children threatened with diphtheria.

Throughout Europe there is a growing interest in the establishment of open air schools for both underweight and normal children. In Amsterdam the American visitor finds many child health stations where the work is conducted by a physician, several nurses, a midwife and social worker. The health station refers cases needing medical attention to the family physician, or in case of economic pressure the city health department provides for the necessary treatment. Instruction in personal hygiene and the prevention of disease is given at the health stations.

About 20 years ago Denmark organized breast-feeding stations which are being maintained now in Copenhagen. Babies who are wholly or in part breast-fed are brought to these stations. At frequent intervals they are brought back for reëxamination and weighing. The mothers receive instructions and are given allowances of milk for their own daily use. Bottle-fed babies are not received at these stations.

According to the Child Welfare Act passed in 1925 every parish in Denmark constitutes a child welfare district. A child welfare council in each district is responsible for the care of dependent or abused children in that section. Insurance societies providing sick benefits are popular in Denmark and provide benefits during and after childbirth.

Sweden operates its child health program in an entirely different way. The country is divided into 2,000 sanitary districts and in each there is a children's committee, composed of a local physician, minister, school teacher and selected citizens. This committee takes charge of the health of dependent and problem children.

Sweden is also doing excellent work in the control of infectious diseases. Hospitals for the care of patients with infectious diseases have been established under government control. The government is supporting 7,000 beds in the larger cities and rural districts.

In Norway there is a system of sanitary districts presided over by a sanitary council, which is headed by a medical officer, usually a practitioner. All public health activities come under control of this medical officer, including the control of epidemics, medical assistance

to the needy and care of the insane. Norway is divided into 1,000 districts and each is provided with an official midwife who gives care to mothers in childbirth.

In 1926 Norway appropriated about $7,000,000 to the public health department, which represents nearly one-thirtieth of its entire appropriation of $218,000,000.

AMERICAN FOUNDATION FOR MENTAL HYGIENE

THE American Foundation for Mental Hygiene has been established according to the announcement made at the 19th Annual Meeting of the National Committee on Mental Hygiene recently held in New York, N. Y.

Clifford W. Beers, secretary of the committee, outlined the purpose and scope of this new Foundation. In part Mr. Beers explained:

> It is the first Foundation organized for the exclusive purpose of financing and doing work that will enable men, women and children to live happier, healthier and more efficient lives through a better understanding and management of the processes of their minds and of the controlling forces in human behavior.

Although the Foundation was started without an endowment, Mr. Beers announced that the Foundation has received $50,000 from the estate of Mrs. John L. Kane, and another $100,000 has been pledged on the condition that $900,000 more is raised. The $50,000 will be used toward defraying the expenses of the First International Congress on Mental Hygiene, scheduled for 1930.

NEW CANCER COMMITTEE

DURING the 57th Annual Meeting of the American Public Health Association in Chicago in October, 1928, a new National Cancer Committee and a Chicago Committee were organized. These committees are not committees of the A. P. H. A.

The functions of these committees have not been definitely outlined, but preliminary organization announcements stated that "they would coördinate, if possible, and pass on some of the present methods of cancer treatment."

Actual clinical work will be performed at the Cook County Hospital and Oak Forest Sanatorium of Chicago under the direction of the proposed local committee consisting of: Frank Billings, M.D., Herman N. Bundesen, M.D., Mrs. Wilber R. Cubbins, Gilbert Fitzpatrick, M.D., Ludwig Hektoen, M.D., L. L. McArthur, M.D., Joseph L. Miller, M.D., Frank Morton, M.D., William A. Pusey, M.D., John E. Tuite, M.D., and Gideon Wells, M.D.

The proposed National Committee consists of: Dr. J. C. Bloodgood, Baltimore, Md.; R. C. Coffey, Portland, Ore.; W. B. Coley, New York, N. Y.; Leonard Freeman, Denver, Colo.; W. D. Haggard, Nashville, Tenn.; F. H. Lahey, Boston, Mass.; Otis Lamson, Seattle, Wash.; N. J. MacLean, Winnipeg, Can.; U. Maes, New Orleans, La.; Angus McLean, Detroit, Mich.; James F. Peroy, Los Angeles, Calif.; Emmett Rixford, San Francisco, Calif.; and C. L. Starr, Toronto, Can.

In making announcement of the organization of the committees C. H. Mayo, M.D., at the Chicago meeting said it would provide a central point to which would be brought all information on any aspect of cancer collected, where further investigations could be planned, and from which information could be given out.

LEE, MASS., FOLLOWS OLD PROCEDURE

DESPITE the fact that Lee, Mass., recorded 900 cases of septic sore throat with more than 40 deaths this summer due to milk from an infected cow which was distributed raw among customers, the town has not passed regulations regarding the pasteurization

of milk. However, one pasteurizing plant has been installed in the vicinity of Lee since the epidemic but there is no community law demanding that all the milk distributed and consumed by the population of Lee be pasteurized.

MICHIGAN P. H. A. CONFERENCE

THE Michigan Public Health Association will hold its annual conference with the Michigan State Department of Health in January.

TRIBUTE TO CHARLES B. BALL

IN paying tribute to Charles B. Ball, for a quarter of a century chief sanitary inspector of the Chicago Health Department, whose death occurred while he was at his desk the middle of October, the *Chicago Daily News* editorially pays tribute also to the many men and women who are devoting their efforts to public health.

It says:

> The value of such men to a community is inestimable. It is their work which makes it possible for us to live in spite of the politicians. Mayors and aldermen come and go—there have been many since 1904 when Charles B. Ball came from New York to Chicago to take up his work in this city's administration—but it is the men in the continuous service of the city, men expert and trained, men who love the work they do and do it with intelligent enthusiasm and unfailing fidelity, who make life tolerable and safe for us. Take them out of the machinery of government and leave us only the elected and politically appointed heads of departments, and we would be soon in a disastrous mess.
>
> There are others than Charles B. Ball in the service of the city, and we pay them all a tribute in paying this tribute to him.

NEW YORK CITY'S DEPARTMENT OF HOSPITALS

A NEW Department of Hospitals has been organized by Mayor James J. Walker of New York City which will begin to function February 1, 1929. The bill was passed by both branches of the Municipal Assembly.

Under this plan all the hospitals controlled by the city will be reorganized. At present several are under the direction of the Department of Health; the Department of Welfare and another group are directed by the trustees of the Bellevue and Allied Hospitals. According to the new arrangement these three groups will come under the direction of one head to be known as Commissioner, whose appointment will be announced later.

Preceding the signing of the bill by Mayor Walker making this organization a reality there was a hearing in which representatives of several civic and welfare organizations participated.

PREVENTIVE MEASURES IN NEW MEXICO

IN Dona Ana County, C. W. Gerber, M.D., Health Officer, is directing a house-to-house canvass for the purpose of discovering all malaria cases and carriers in the county. This survey is made possible by a number of public health nurses added to the county health department's staff.

A toxin-antitoxin campaign is being carried on in Colfax and Mora counties under direction of the health officers, H. W. Heymann, M.D., and J. J. Johnson, M.D. They are aiming at the inoculation of every child who has not received previous treatment.

ABRAHAM FLEXNER LECTURESHIP

VANDERBILT University School of Medicine has recently announced the inauguration of the Abraham Flexner Lectureship, established through the generosity of Bernard Flexner of New York, N. Y. There will be delivered a series of 5 lectures, the first lecturer being Dr. Heinrich Poll, director of the Institute of Anatomy of the faculty of University of Hamburg, Germany.

PERSONALS

R. S. CRAIG has been appointed Director of the Bureau of Chemistry and Food, Baltimore, Md., to succeed Dr. J. H. Shrader, resigned. Mr. Craig has been with the Baltimore City Health Department for 15 years and for 6½ years has been assistant director of the bureau.

DR. CLAIR V. LANGTON, formerly a member of the faculty of public health, University of Michigan, has resigned to become head of the Department of Public Health at the University of Oregon.

DR. ALONZO F. MYERS, formerly a member of the executive committee of the Ohio Public Health Association, has accepted a position as State Director of Teacher Training in Connecticut. He will be in charge of four state teachers' colleges, and will direct the summer session of the state department, held at Yale University, New Haven, Conn.

DR. R. JODOROLA has been appointed city Health Officer of Los Banos, Calif., to succeed Dr. B. H. Bush.

DR. J. A. DE SERPA has succeeded Dr. Louis Achenback as city Health Officer of Ventura, Calif.

DR. H. W. COMFORT is city Health Officer of Fortuna, Calif.

DR. H. B. NEAGLE has been appointed Health Officer of Madera County, Calif., to take the place of Dr. Smith A. Quimby.

GROVER C. MULL of Menlo Park, Calif., has succeeded Clarence R. Walter as city Health Officer of Atherton, Calif.

DR. LEROY B. DUGGAN, Belton, Tex., has been made assistant director of health of the Dallas, Tex., public schools. He succeeds Dr. L. E. Hamilton, who resigned.

DR. ROGER I. LEE, professor of hygiene of Harvard University Medical School, Boston, Mass., has been made chairman of the committee on public health of the Boston Chamber of Commerce.

DR. H. E. LEFEVER, formerly resident physician at the Franklin County Tuberculosis Sanatorium, Columbus, O., is associate director of student health at Ohio University, Athens, O.

DR. FERDINAND R. KREMBS has been appointed Health Officer for the city of Stevens Point, Wis.

SIR SAMUEL SQUIRE SPRIGGE, London, England, editor of *The Lancet*, is visiting schools of medicine in this country and Canada. Sir Samuel Sprigge expects to visit 8 universities in the United States and 2 in Canada before returning to England where he will make a report on medical education in this country.

DR. WILLIAM H. O'NEIL has been appointed Health Officer of Ansonia, Conn.

CONFERENCES

December 3–7, Radiological Society of North America, Chicago, Ill.

December 7–8, New Jersey Public Health and Sanitary Association, Princeton, N. J.

December 13–15, American Vocational Association, Philadelphia, Pa.

December 26–29, American Association for Labor Legislation, Chicago, Ill.

December 26–29, National Community Center Association, Chicago, Ill.

December 27–29, Society of American Bacteriologists, Richmond, Va.

December 27–January 2, American Association for the Advancement of Science, New York, N. Y.

December 28, International Congress of Tropical Medicine and Hygiene, Cairo, Egypt.

December 29, American Student Health Association, New Orleans, La.

January 22–23, Southwestern Tuberculosis Association, Ft. Worth, Tex.